This brief fun activity provides some interactive questions on recognition and assessment of blood components in the transfusion medicine laboratory.

After answering each question you must select submit. Once an answer is submitted, you will not be able to change your answer for the duration of the activity. If you do not select an answer and select submit, the question will be recorded as wrong. You are able to retake the activity from the beginning.
References
2. Ontario Laboratory Accreditation v 6.0, December 2013, TM 069

Explanation
The unit on the right resembles a normal Red Cell unit and can be issued after documenting visual inspection. The unit on the left is bright red in appearance, and while normal Red Cell units can vary in shades of red according to hemoglobin content, this bright red appearance suggests this unit may be unusual and further investigation may be required before it can be issued. According to IQMH requirement VI.1 TM 069: Blood components/products shall be visually inspected for acceptable appearance immediately before issue or re-issue. This shall be documented. Blood components/products shall not be released from inventory if visual leakage or abnormalities are noted.

Next steps may include:
- Consult the CBS Visual Assessment Guide
- Seek the advice of your supervisor
- Contact your local CBS to inform them and obtain their recommendation
References
5. Eder AF et al. The American Red Cross donor vigilance program: complications of blood donation reported in 2006. Transfusion 2008; 48:1809-1819

Explanation
As the colour of the bright red unit does appear different from usual appearance, it would be appropriate to question it. In this case, the unit was suspected to be an incidental arterial donation. Arterial donations are acceptable for transfusion however may result in an adverse reaction in the donor. The blood supplier should be notified if any unusual appearance of a blood component is noted in case there is a need for follow up with other components produced from the same donor or follow up with the donor.
Multiple Choice

You have received Red Blood Cells transferred and packed from another facility with unit has a temperature indicator attached to it. You have no experience with these indicators. What should you do?

- A) Accept both units and enter into your LIS
- B) Reject both units and document this in your LIS
- C) Discard both units without entering into your LIS
- D) Take the temperature of the unit and place into quarantine and contact the issuing facility for more information

Review Area

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References:


Explanation:

If you do not have experience with temperature indicators, you will need more information about that specific type before you can determine if either unit should be accepted into your inventory. Until you are sure if these units will be acceptable, place them in quarantine storage at 1-6C until the decision has been made.
References
7. Canadian Standards Association Blood and Blood Components Z902-10 standard 9.5.3, 11.4.5, 11.4.6, 11.4.7

Explanation:
Red blood cells should not be returned to usable inventory unless they have been outside of a controlled environment for less than 30 minutes (CSA Z902-10 11.4.7). The studies that led to the 30-minute rule were conducted in the 1970s when blood products were stored in containers (glass bottles) with or without additive solutions, and do not reflect current practices. Standards also stipulate that temperature of Red Blood Cells during storage should not exceed 10C. However, recent research is available that challenges this standard. In the recent past, Canadian Blood Services (CBS) and other international blood agencies have been required, by this standard, to discard large numbers of donor units. This led to increased attention to performing research to document the actual risk of contamination in units left out of regulated storage for more than 30 minutes. A two phase study revealed that:
1) RBC unit quality was preserved after single or multiple room temperature exposures.
2) Bacterial growth in units inoculated with bacteria such as E. coli did not significantly increase during the first two hours of a 5-hour exposure of RBC units to room temperature.

This and the other major observations from this study are included in a short research paper by the CBS Research Unit, available at transfusionmedicine.ca and listed in the references “Doubling the 30-minute rule without compromising Red Blood Cells quality and safety”. At this time it seems likely that the next version of Canadian standards may include a change to the current standard regarding this scenario.
References:

Explanation:
Current standards require blood for crossmatch to a recipient with a history of clinically significant red cell antibodies to lack the corresponding antigen. Canadian Blood Services will attach a phenotype tag to a unit that has been antigen typed after the end label has been applied. The above white tag indicates that the donor sample associated with this unit donor has been typed for the circled antigen. The note on the tag recommends that the antigen typing should be confirmed prior to transfusion. For hospitals that do not perform antigen typing they need to request confirmed antigen negative units from CBS. A ‘buff coloured’ tag attached to the unit indicates that a confirmatory typing has been performed by CBS (i.e. this donor has been tested on two donations) but the second testing on this current donation was completed after the end label was applied.
A unit of Red Blood Cells is returned to the laboratory following a surgical procedure on a patient. The unit appears bright red in colour and some clumps or clots are suspended in the bag. What intravenous fluid(s) might cause this type of result if added to the unit of Red Blood Cells?

- A) Sterile de-ionized water
- B) 5% albumin
- C) Ringer’s Lactate
- D) Dextrose

**References:**

**Explanation:**
The only fluid listed that can cause both the hemolysis and the clotting is Ringer’s Lactate, which is contraindicated as a fluid to run with Red Cell transfusions, or add to a unit of Red Cells. Ringer’s Lactate contains calcium, which when added to Red Cell unit, will re-initiate the clotting sequence that would normally take place when sufficient plasma is present (anticoagulated blood has had calcium inactivated). It also contains potassium, which is contraindicated during blood transfusion. Water (answer a) will also cause hemolysis if added to Red Cells, but is unlikely to cause the clotting or clumping seen in this unit. Answer b) list the fluid that is acceptable to run at the same time as a Red Cell transfusion and is unlikely to cause any hemolysis or clotting. Answer d) Dextrose, is an unacceptable fluid to run with Red Cell transfusion, but is unlikely to cause the combined effect of hemolysis and clotting seen in this unit.
References:
7. Canadian Standards Association Blood and Blood Components Z902-10 Standard 10.7.4
11. Clinical Guide to Transfusion, Canadian Blood Services, Chapter 15, April 2011
14. Bloody Easy 3 Callum J et al ORBCoN 2013:
15. National Advisory Committee 2014 Statement regarding appropriateness of use of Cytomegalovirus (CMV) sero negative vs CMV safe product. www.nacblood.ca/resources/guidelines/CMV.html

Explanation:
1. Irradiated cellular blood components must be used in situations where patient’s immune systems may be compromised or when units are very similar HLA type to the recipient. The purpose of irradiating components is to render immune capable cells in the transfused component inactive to prevent Transfusion Associated Graft Versus Host Disease (TA-GVHD).
2. Patients who are IgA deficient can form anti-IgA. Anti-IgA can result in an anaphylactic reaction to blood components as they contain normal levels of IgA. In patients with a known history of this type of reaction, it is prudent to transfuse components from IgA deficient donors. If IgA deficient Red Blood Cells are not available, washed Red Blood Cells are the next best choice. A sufficient amount of saline must be used to remove as much IgA as possible from the product therefore, it is recommended that Red Blood Cells washed twice be used.
3. If a patient has a currently reactive clinically significant Red Blood Cell antibody or a history of one, donor units lacking that antigen must be selected for transfusion according to Standards.

4. Cytomegalovirus (CMV) is a virus that can affect immunocompromised individuals such as fetuses and neonates. Most adults will have been exposed to this virus. CMV can cause mild cold like symptoms in normal healthy individuals however can result in serious complications for immunocompromised patients such as brain injury and deafness. The use of leucodepleted cellular blood components greatly reduces the risk of CMV transmission and is considered to be CMV safe. However, many hospitals will still provide donor units that test negative for anti-CMV for intrauterine, neonatal transfusion and to antenatal women who test CMV negative.
References:
7. Canadian Standards Association Blood and Blood Components Z902-10 Standard 7.12.6

Explanation:
Cellular blood components are treated with Gamma-ray irradiation to prevent transfusion associated graft versus host disease. A sufficient dose of irradiation will render the lymphocytes present in the donor component inactive and prevent any production of antibodies against the transfusion recipient. For red blood cells, a dose of 25-50 Gy (2500 cGy-5000cGy) is required. As a quality control measure, to ensure each component irradiated has received a sufficient dose of irradiation, an irradiation sensitive label is used. This indicator label will black out the word ‘NOT’ from the label leaving the word ‘IRRADIATED’ indicating that a sufficient dose was applied. The expiry of the unit, once irradiated is 28 days or the original expiry date whichever comes first.
Multiple Choice

What does the Jka phenotype on the Red Blood Cell unit label indicate?

- A) That the unit has been typed twice on two previous donations as Jka negative
- B) That the unit has been typed once only and on this current donation as Jka positive
- C) That the unit has been typed once only on a previous donation as Jka negative
- D) That the unit has been typed twice (the second time being on this current donation) as Jka negative

References:

Explanation:
Canadian Blood Services will phenotype donor units for several clinically significant antigens to help hospitals select blood for recipients with identified antibodies as well as for recipients at increased risk for alloimmunization who are transfusion dependent (e.g. Sickle Cell Disease and Thalassemia). In order for the end label of the donor unit to be labeled as negative for an antigen, the donor has had to have been typed twice to confirm the result. If the donor was typed twice on previous donations, the antigen negative result will appear on the end label. If the antigen is underlined, it indicates that the second confirmatory testing was performed on this current donation.
Plasma

References:
Not required.

Explanation:
Not required.
Multiple Choice

Which of the following statements about Frozen Plasma is correct?

- A) Prepared from whole blood collected into 70 mL of SAGM and separated from the red cells
- B) Frozen within 24 hours of collection
- C) Labeled as leukoreduced
- D) Contains all coagulation factors at levels equal to that of Fresh Frozen Plasma

Review Area

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References:

Explanation:
Frozen Plasma is not labeled as leukoreduced, since some units may contain greater than $5 \times 10^6$ leukocytes/unit. It is prepared from whole blood collected into 70 mL of CPD (not SAGM), frozen within 24 hrs of collection, and contains all coagulation factors but some at levels lower than that of Fresh Frozen Plasma Apheresis.
17. Canadian Blood Services CL# 2008-28 Important Information Regarding ISBT 128 Sample Labels and Product Codes

**Explanation:**

The donor unit number includes a code for the country (C for Canada), the collection site (here 0555 for CBS Ottawa), year of collection (14 for 2014), a six digit number with a check digit (showing in the box). The “21” showing vertically is a production code used by CBS, not for hospital use. The combination of the digits in the ISBT 128 donor unit number ensures there will be no duplication of numbers so that each donor unit number is unique.
Multiple Choice

Which of the following is an indication for use of Frozen Plasma? Select all that apply.

- A) Preparation of whole blood for exchange transfusion in neonates
- B) In a Massive Transfusion Protocol replacement therapy for coagulation factor deficiencies
- C) Correction of an INR of 1.5
- D) Treatment of patient for hypovolemia

Review Area

References:
18. Ontario Clinical Practice Recommendations for the Use of Frozen Plasma version 1.1 May 2010
   www.transfusionontario.org
19. CSTM Choosing Wisely Canada www.transfusion.ca and www.choosingwisely.org

Explanation:
Frozen Plasma CPD and Fresh Frozen Plasma Apheresis both can be used for reconstitution of Red Blood Cell units into whole blood for exchange transfusion. Frozen Plasma is used in Massive Transfusion Protocol (MTP). Frozen Plasma CPD can also be used for replacement therapy for coagulation factor deficiencies, but strictly in situations where factor concentrates, the preferred therapy of choice, are not immediately available. Frozen Plasma CPD is not the preferred fluid for treating hypovolemia. Saline and other non blood product intravenous fluids are more appropriate. Use of Frozen Plasma to correct an INR of 1.5 is not an appropriate use of this product. CSTM Choosing Wisely Canada recommendation #3 states “Don’t transfuse plasma to correct mildly elevated (<1.8) International normalized ratio (INR) or activated partial thromboplastin time (aPTT) before a procedure.
Multiple Choice

What is the shelf life of thawed Frozen Plasma?

- A) 24 hours if stored at 1-6C
- B) 24 hours if stored at room temperature
- C) 6 hours if stored at room temperature
- D) 5 days (120 hours) if stored at 1-6C

References:
7. Canadian Standards Association Standard for Blood and Blood Components, Z902-10, Std. 7.6.2.3

Explanation:
A Canadian Blood Services customer letter explains that the thawed shelf life of FP, stored at 1-6C, has been extended from 24 hours to 5 days (120 hours), to align with the CSA standards, Z902-10. Note that Fresh Frozen Plasma Apheresis, once thawed, has an expiry of 24 hours as it is considered collected in an ‘open system’.
Hot Spot

Click on the Expiry Date.

References:
Not required.

Explanation:
Not required.
Multiple Choice

Fresh Frozen Plasma Apheresis is collected into 70-90 mL of anticoagulant and frozen within 8 hours of collection. What type of anticoagulant is used? More than one answer may be correct, select all that apply.

- A) Tri-sodium citrate
- B) ACD-A
- C) CPD
- D) SAGM

References:

Explanation:
Either tri-sodium citrate or ACD-A are used, and the component label clearly shows which one was used for a particular unit. CPD is used for collection of whole blood and is not used in the apheresis collection process. SAGM is an additive solution used in preparation of Red Blood Cells, and is not an anticoagulant.
**References:**

**Explanation:**
The volume of Apheresis Fresh Frozen Plasma collected into ACD-A is 214 +/- 52 mL; collected into tri-sodium citrate it is 495 +/- 59 mL, and Frozen Plasma CPD is 293 +/- 32 mL.

Cryosupernatant plasma contains reduced levels of Von Willebrand factor (VWF) and has a volume of 285 +/- 34 mL. Quality control information published in October 2012 states that Frozen Plasma has 0.91 +/- 0.46 IU/mL of FVIII on units tested between January and June 2012. FFPA has 1.15 IU/mL +/- 0.54 IU. Previous editions of the Clinical Guide for Transfusion and Circular of Information stated 80 IU Factor VIII activity.

Cryoprecipitate is one of 4 plasma components prepared by Canadian Blood Services from volunteer whole blood collection procedures. The insoluble cryoprecipitate is prepared from slowly thawed Frozen Plasma (not fresh frozen plasma), and the remaining supernatant plasma is refrozen as Cryosupernatant Plasma CPD. Quality control measures as of October 2012 indicate that the volume of individual units of cryoprecipitate is 10 mL (mean +/- 2 SD). Each unit of cryoprecipitate contains a fibrinogen content is 432 +/- 264 mg.
Multiple Choice

What is the total volume of Fresh Frozen Plasma Apheresis unit collected into ACD-A?

- A) 293 +/- 32 mL
- B) 285 +/- 34 mL
- C) 214 +/- 52 mL
- D) 495 +/- 59 mL

Explanation:
The volume of Apheresis Fresh Frozen Plasma collected into ACD-A is 214 +/- mL; collected into tri-sodium citrate it is 495 +/- 59 mL. The volume of Cryosupernatant Plasma CPD is 285 +/- 34 mL, and Frozen Plasma CPD is 293 +/- 32 mL.

References:
Which of the following statements about Cryoprecipitate, prepared by Canadian Blood Services, is correct?

- A) Cryoprecipitate is prepared from slowly thawed Frozen Plasma
- B) Cryoprecipitate is prepared from rapidly thawed Fresh Frozen Plasma
- C) The volume of one unit of cryoprecipitate is 100 +/- 14 mL
- D) The fibrinogen content of one unit of cryoprecipitate is 150 +/- 25 mg

References:
16. Circular of Information for Plasma Components, Canadian Blood Services, October 2012, pg 1

Explanation:
Cryoprecipitate is one of 4 plasma components prepared by Canadian Blood Services from volunteer whole blood collection procedures. Cryoprecipitate is prepared from slowly thawed Frozen Plasma (not Fresh Frozen Plasma), hung overnight in the refrigerator (1-6C). The precipitate that forms from this process is centrifuged and separated from the supernatant plasma. The supernatant plasma is refrozen as Cryosupernatant Plasma CPD and the precipitate is frozen as cryoprecipitate. Quality control measures as of October 2012 indicate that the volume of individual units of cryoprecipitate is 10 mL (mean +/- 2 SD), and fibrinogen content is 432 +/- 264 mg (mean +/- 2 SD).
Hot Spot

Click on the Volume of Product.

References:
Not required.

Explanation:
Not required.
Multiple Choice

Which of the following statements concerning Cryosupernatant Plasma is correct? Select all that apply.

- A) An alternative to Cryosupernatant Plasma is solvent/detergent treated plasma
- B) Cryosupernatant Plasma contains approximately 432 mg of fibrinogen per unit
- C) Cryosupernatant Plasma provides a source of plasma with reduced levels of Von Willebrand Factor (VWF)
- D) Cryosupernatant Plasma is used primarily for patients with thrombotic thrombocytopenic purpura or hemolytic uremic syndrome undergoing plasma exchange

Review Area

References:

Explanation:
Cryosupernatant plasma is prepared from slowly thawed Frozen Plasma that is centrifuged to separate the insoluble precipitate from the supernatant plasma. The supernatant plasma is removed leaving the insoluble cryoprecipitate remaining in the bag. Both the cryoprecipitate and cryosupernatant plasma are then frozen.

Cryosupernatant plasma is available for all hospital transfusion laboratories to include in inventory, however it is not appropriate to stockpile this component unless the transfusion service is a referral centre that performs therapeutic plasma exchange. Cryosupernatant is used to treat patients with thrombotic thrombocytopenic purpura (TTP) or hemolytic uremic syndrome (HUS) and has reduced levels of Von Willebrand Factor (VWF). Since the occurrence of this type of patient is infrequent, the need for this component to be in continuous stock is limited to very few hospital transfusion services.

Since 2012, solvent/detergent treated plasma has been available from CBS and is also used for plasma exchange and occasionally plasma transfusion. However, it is restricted to the treatment of specific patients who require a high volume of transfusion annually because they have congenital or acquired TTP or HUS and/or have experienced previous severe adverse reactions to frozen plasma.
### References:

### Explanation:
According to the CBS Circular of Information, expiry of Frozen Plasma once thawed is 120 hours if stored at 1-6C; expiry of cryoprecipitate once thawed is 4 hours, stored at room temperature; expiry of pooled platelets is 5 days from collection of the oldest donation in the pool, stored at room temperature with continuous gentle agitation; expiry of Apheresis Fresh Frozen Plasma once thawed is 24 hours if stored at 1-6C.
Multiple Choice

Donor samples are tested and must be non-reactive for which of the following transmissible disease tests? Select all that are correct.

- A) Antibodies to hepatitis B core antigen
- B) Hepatitis B surface antigen
- C) Presence of viral RNA for West Nile Virus
- D) Malaria

Reference:

Explanation:
Brief answer for review box:
Donor samples are tested for all infectious disease markers listed here except Malaria.
Extended answer as below:
In addition to ABO group, Rh type and antibody screening, the following transmissible disease tests are part of the donor testing process:
- Antibodies to human immunodeficiency virus (HIV-1, HIV-2), hepatitis C virus (HCV), human T-cell lymphotropic virus, type 1 and 2 (HTLV-I/II) and hepatitis B core antigen.
- Hepatitis B surface antigen (HBsAg)
- Presence of viral RNA (HIV-1, HCV, and West Nile Virus)
- Presence of viral DNA (hepatitis B virus)
- Syphilis
- Screening for agent causing Chagas disease (T cruzi) is only performed on donors that are assessed to be high risk
- There is currently no licensed donor screening test for Malaria. Donors are deferred or accepted for risk of Malaria based on their answers on the donor questionnaire on travel history.
References:  
Not required.

Explanation:  
Not required.
References:
23. IQMH (formally Ontario Laboratory Accreditation) Requirements version 6.0, December 2013, TM 003

Explanation:
IQMH (formerly OLA) requirements, which in turn reference CSA and CSTM standards, include a requirement that any storage area or equipment without a continuous temperature monitoring device shall have the temperature checked and results recorded every 4 hours. Pooled and Apheresis Platelets are stored in gas-permeable bags and must be stored at 20-24°C with continuous gentle agitation for the shelf life which is 5 days. During transport, cessation of agitation for 24 hours is acceptable.
Multiple Choice

Platelet components may have increased risk of bacterial growth because they are stored at room temperature. Identify all the statements that are correct.

- A) Platelet components carry an increased risk of causing septic reactions in the recipient
- B) Platelet components are cultured by Canadian Blood Services to detect bacteria
- C) A diversion pouch in blood collection has been shown to reduce the risk of bacteria
- D) The risk of bacterial sepsis per platelet concentrate is estimated at 1 in 10,000

References:
   (online edition at www.tranfusionmedicine.ca)

Explanation:
Storage at 20-24C, which is required for platelet components in order to have functioning platelets makes this component a higher risk for bacterial proliferation during storage. From the beginning of the whole blood collection process, measures are put in place to reduce the risk of bacteria entering the unit. Proper cleansing of the venipuncture site and the use of a diversion pouch to remove the first few mL of blood during collection are the first two steps in this process. Platelets also are sampled approximately 24 hours after the donation and this sample is inoculated into culture media prior to release from Canadian Blood Services. These culture tubes are incubated at 37C for 7 days. Canadian Blood Services will notify hospitals if bacteria are detected. The relative risk of a symptomatic reaction to platelets is 1 in 10,000, much higher than other risks like transmission of West Nile Virus (less than 1 in one million). The risk for death from bacterial sepsis from receiving platelets is estimated to be 1 in 60,000.
References:
7. Canadian Standards Association Blood and Blood Components Z902-10 Standard 7.11.1
   www.transfusionontario.org (Presentation Library)
27. Canadian Blood Services CL #2009-19 Important Information Regarding ‘Produced On’ Date in CPD Platelets
   Pooled LR
28. Canadian Blood Services CL #2007-25 Important Information Regarding Primary TRALI Reduction Measures

Explanation:
Pooled platelets are prepared from whole blood (WB) collected into CPD anticoagulant. The buffy coat layer
(containing the platelets) is separated from each of four donors, then pooled together and resuspended in the plasma
of one of the four donors (who must be a male). Male plasma has been shown to have a lower risk of causing
Transfusion Related Acute Lung Injury (TRALI).

Platelets that are pooled must of the same ABO group. Platelets of both Rh Negative and Rh Positive donors can be
pooled together however for a unit to be labeled Rh Negative, all four donors have to be Rh Negative.
The date and time that the platelet is pooled is documented on the end label however, the expiry date is calculated on
the collection date of the oldest unit in the pool.
Reference:
www.transfusionmedicine.ca

Explanation:
Apheresis platelets are leukoreduced at the time of collection as part of the apheresis process. Pooled platelets are produced from pooling theuffy coat layers from four whole blood donations and then the pool is leukoreduced through filtration as part of the production process.

The pooled platelets separated from the buffy coat pool are resuspended in the residual plasma from one of the donors (must be a male donor).

Apheresis platelets contain > or = 300 x 10^6 platelets per unit (in at least 75% of those tested) and have a volume of 329 +/- 194 mL and pooled platelets contain > or = 240 x 10^9 platelets per pool (in at least 75% of those tested) and have a volume of 342 +/- 31 mL.

Apheresis platelets are indicated for patients with platelet antibodies such as anti-HPA-1a and/or have exhibited refractoriness (less than expected platelet increments post transfusion).
Multiple Choice

Pooled platelets are:
Select all that apply.

- A) Produced from every whole blood donation collected at Canadian Blood Services
- B) Produced from 5 whole blood donations
- C) Produced from 4 whole blood donations
- D) Pooled using a unit of male donor plasma

Review Area

References:

Explanation:
Canadian Blood Services collects whole blood in two different bag types (B1 for platelet production and B2 for non-platelet production). Pooled platelets are produced from pooling the buffy coat layers from four whole blood donations and the platelets are resuspended in the plasma of one of these donors (which is male).
Multiple Choice

What patients require irradiated pooled platelets LR CPD or irradiated apheresis platelets? Indicate all correct responses.

- A) Patients who have received allogeneic hematopoietic progenitor cell transplants
- B) Patients receiving directed platelet donations from blood relatives
- C) Patients with aplastic anemia receiving strong immunosuppressive therapy
- D) Patients receiving HLA matched platelets

References:

Explanation:
Patients at risk for Transfusion-Associated Graft-versus-Host Disease (TA-GVHD) require irradiated cellular blood components. All of the answers in this question would require irradiated cellular blood components. Indications for irradiated blood include patients with congenital immunodeficiency states, patients receiving blood for intrauterine transfusions and neonatal exchange transfusions, certain patients with lymphoproliferative diseases, patients undergoing bone marrow or stem cell transplants; recipients of directed donations from family members; recipients of HLA-matched platelets; patients treated with purine analogs, purine antagonists, alemtuzumab and anti-thymocyte globulin.
Hot Spot

Click on what the product is produced from.

References:
Not required.

Explanation:
Not required.
References:
30. Robillard et al. Use of hemovigilance data to evaluate the effectiveness of diversion and bacterial detection. Transfusion 2011;51:1405-1411

Explanation:
The so called ‘cottonball’ precipitate is often present in platelets that are contaminated with bacteria. This particular case was cultured and revealed the presence of *S aureus*. It reinforces the importance of visual inspection at the time of issue.
Hot Spot

Click on the date product was produced.

References:
Not required.

Explanation:
Not required.
Certificate of Course Completion

This is to certify that

has taken the course

Score Obtained  Grade

21 January, 2016

Authorized Signature

Continue to References

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References

2. Ontario Laboratory Accreditation v 6.0, December 2013, TM 069
5. Eder AF et al. The American Red Cross donor vigilance program: complications of blood donation reported in 2006. Transfusion 2008; 48:1809-1819
7. Canadian Standards Association Blood and Blood Components Z902-10, standards 7.6.2.3, 7.11.1, 7.12.6, 9.5.3, 10.7.4, 11.4.5, 11.4.6, 11.4.7

Continued...
19. CSTM Choosing Wisely Canada www.transfusion.ca and www.choosingwisely.org
23. IQMH (formerly Ontario Laboratory Accreditation) Requirements version 6.0, December 2013, TM 003

Continued...
30. Robillard et al. Use of hemovigilance data to evaluate the effectiveness of diversion and bacterial detection. Transfusion 2011;51:1405-1411