

**Transfusion Camp, University of Toronto  
Seminar Day 4A, March 25, 2022 (1045am-1215pm)**

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**Case 1 (15 minutes)**

A 64 year old woman is being seen in preoperative clinic in preparation for an elective revision total hip arthroplasty (2021 ONTraC provincial transfusion rate 19%). She has been feeling fatigued over the past 6 months. She attributes this to her worsening hip pain. Her past medical history is significant for hypertension. Her current medications include ASA, Ramipril. Her weight is 80 kg. Her labs show the following: hemoglobin 95 g/L, MCV 75 fL, WBC  $6.5 \times 10^9/L$ , platelets  $425 \times 10^9/L$ . Her creatinine is 80  $\mu\text{mol/L}$ . Her ferritin is 20 mcg/L. The surgeon has a spot for the surgery next week.

1. Which one of the following tests is indicated to investigate the cause of her anemia?
  - A) GI workup including colonoscopy
  - B) Hemoglobin electrophoresis
  - C) Serum protein electrophoresis
  - D) Vitamin B12
2. Which one of the following is the appropriate next step in her management?
  - A) Delay surgery until investigations complete
  - B) Delay surgery until patient iron replete
  - C) Proceed with surgery next week, no interventions needed
  - D) Proceed with surgery next week, start iron supplementation this week
3. Which one of the following is an appropriate treatment for her anemia?
  - A) Feramax 150mg po OD
  - B) Ferrous fumarate 300 mg po OD
  - C) IV iron 300-500mg
  - D) IV iron 1000-1200mg

**Case 2 (15 minutes)**

A 75 year old woman (weight 65 kg) is being seen in the surgeon's office in preparation for aortic valve replacement surgery (2021 ONTraC provincial transfusion rate for pre-assessed (seen in preoperative clinic) aortic valve surgery 26%). She presented with shortness of breath on climbing 2 flights of stairs over the past three months. Her past medical history is significant for Type 2 diabetes, hypertension and hypercholesterolemia. She also had breast cancer 4 years ago for which she had surgery, chemotherapy and radiation. Her most recent angiogram did not show significant coronary artery disease. Her current medications include ASA, metformin, insulin, ramipril, furosemide, rosuvastatin and arimidex. On exam her vitals are stable with BP 110/70. Her physical exam is unremarkable. Her labs show the following: hemoglobin 98 g/L, MCV 103 fl, WBC  $9.3 \times 10^9/L$ , platelets  $250 \times 10^9/L$ . Her creatinine is 150  $\mu\text{mol/L}$ . The family doctor states that her hemoglobin has been stable at about 100g/L for the past 2 years. The surgeon has booked her for surgery in 3 weeks.

4. Which one of the following tests would you recommend for investigation of her anemia?

- A) B12
- B) Ferritin
- C) Hemoglobin electrophoresis
- D) Transferrin saturation

5. Which one of the following is an appropriate plan for her surgery?

- A) Consult GI for endoscopy.
- B) Delay surgery until results of bone marrow biopsy known
- C) Delay surgery to optimize patient's anemia.
- D) Proceed with surgery as planned

6. Which one of the following is an appropriate treatment for this patient's anemia?

- A) Eprex 40,000 units s.c. weekly x 3 weeks
- B) Ferrous gluconate 300 mg po OD x 3 weeks
- C) IV iron 1000-1200mg
- D) Proceed with surgery as planned

### Case 3 (20 minutes)

A 55 year old woman originally from India presents to the preoperative clinic for bilateral knee surgery (2020 ONTraC provincial transfusion rate 4%; 2021 ONTraC provincial transfusion rate 0%) booked in one week. Her hemoglobin is 115 g/L, MCV 85 fL, WBC  $5.5 \times 10^9/L$ , platelets  $250 \times 10^9/L$ . Her creatinine is 70  $\mu\text{mol/L}$ . Her ferritin is 40 mcg/L. Her surgeon has started her on oral iron supplementation. When speaking to her, she states that in her work-up a couple of months ago for a minor surgery, she was found to have a very rare blood type. She hands you a card that she carries in her wallet that states that she has Bombay type blood. You call the blood bank to find out that Bombay type blood is an extremely rare blood type. In fact these patients can only receive Bombay type blood. The blood bank informs you that Canadian Blood Services only has 14 frozen red blood cell units of Bombay type in their inventory.

7. Which one of the following is an appropriate management strategy for this patient?

- A) Delay the surgery to enable patient to donate 2 units of autologous PRBCs
- B) Delay the surgery and treat the patient with iron and ESAs to get hemoglobin  $>130 \text{ g/L}$
- C) Obtain 4 units of frozen Bombay type RBCs from CBS, thaw and bring to hospital and proceed with surgery as booked
- D) Proceed with surgery.

8. Which one of the following intra-operative blood conservation strategies is indicated in this case?

- A) Acute normovolemic hemodilution
- B) Intra-operative cell-saver use
- C) Perioperative tranexamic acid
- D) Transfuse plasma and rFVIIa if any bleeding encountered

9. Which one of the following is an appropriate post-operative plan for the patient?

- A) Continue oral iron supplementation
- B) Give ESAs if symptoms of anemia
- C) Minimize unnecessary phlebotomy
- D) Transfuse frozen Bombay type unit if Hgb < 80 g/L

**Case 4 (20 minutes)**

A 13 year old boy is admitted after being hit by a car while riding his bike. He has significant abdominal and orthopedic injuries. His family was present at the scene and advised the health care providers that the patient and the family are Jehovah's Witnesses. The patient has undergone surgery with hemodynamic resuscitation with 3-4 L of crystalloids. His labs show the following: hemoglobin 45 g/L, WBC  $8.0 \times 10^9/L$ , platelets  $65 \times 10^9/L$ . His INR is 1.5, PTT is 40 seconds. It is suspected that his laboratory values are both secondary to the acute coagulopathy of trauma and dilutional.

10. Which one of the following is an appropriate post-operative order for this patient?

- A) CBC, INR, aPTT Q8H until normalized
- B) CBC, INR, aPTT, chemistry panel daily
- C) CBC, INR, aPTT, chemistry panel every 2 days
- D) No follow up laboratory testing unless clinically indicated.

11. Which one of the following is an appropriate post-operative order for this patient?

- A) Eprex 20,000 units daily x 5 days then reassess CBC
- B) Eprex 20,000 units daily x 10 days, CBC daily
- C) Eprex 20,000 units daily until discharge home
- D) Eprex 20,000 units daily until Hgb >120 g/L

The patient has now been extubated and is awake. The clinical team feel strongly that this patient should be transfused. The parents state that he is a Jehovah's Witness and would not want to be transfused even in a life-threatening situation.

12. Which one of the following is appropriate when discussing transfusion with the patient and family?

- A) Ask them to speak with their Jehovah's Witness medical liaison about whether there are some fractionated products that would be acceptable
- B) Give them a list of all the non-cellular blood products available from CBS and ask them which of them they would accept for transfusion
- C) Given the medicolegal risks in this case ask that the hospital ethicist and risk management team be present at all meetings with the parents
- D) Inform them that your hospital's policy is that adolescents with decision-making capacity can make their own decisions should they wish to do so

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