

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

POSTGRADUATE DIPLOMA IN TRANSFUSION MEDICINE
EXAMINATION – JANUARY/FEBRUARY 2024

Date:- 29th January 2024

Time:- 1.00 p.m. – 4.00 p.m.

PAPER I

Answer all eight (08) questions.

Answer each question in a separate book.

1.

1.1. Discuss how you would establish a National Rare Blood Donor Registry. (50 marks)

1.2. How do you plan a donor retention programme in your blood bank? (30 marks)

1.3. List the advantages of a donor haemovigilance system. (20 marks)

2. A 19-year-old boy with the diagnosis of sickle cell disease, admitted with Hb of 5 g/dl, received a red cell exchange for acute chest syndrome. His post transfusion Hb was 11 g/dl.

Five days later, he was admitted with fever with a history of passing dark coloured urine. On admission his Hb was 3.9 g/dl. His chest was clear and there were no obvious signs of infection.

At the blood bank, investigations revealed a positive DAT with IgG 2+ and C3d 1+. Anti Le^b was identified by enzyme method only. In elution studies, no antibodies were detected.

2.1. What is the most possible cause for this condition? (10 marks)

2.2. What are the typical clinical and laboratory features associated with the above condition? (40 marks)

2.3. Explain the pathogenesis of this condition. (30 marks)

2.4. How would you manage this patient? (20 marks)

3. A 34-year-old male labourer was admitted to a medical ward with a history of fever for 5 days. He had headache, vomiting and reduced urine output for one day. He developed shortness of breath (SOB) and tachypnoea after 12 hours of admission.

On examination, he is febrile (39°C), blood pressure is 90/55 mmHg, respiratory rate is 38/minute, pulse rate is 122/minute.

Full blood count	
WBC	13 x 10 ⁹ /L
Neutrophils	91%
Lymphocytes	8%
Monocytes	1%
Platelet count	43 x 10 ⁹ /L
Blood picture	evidence of bacterial infection, no fragmented red cells.

- 3.1. List five (05) most likely differential diagnoses. (20 marks)
- 3.2. What further information would you like to get from the patient? (20 marks)
- 3.3. Mention additional investigations you would like to perform. (20 marks)

Patient deteriorated with increased shortness of breath and decreased oxygen saturation. Urine output was 5 ml/hour. Patient was referred to the Transfusion Physician's opinion for further management.

- 3.4. Briefly describe how you would manage this patient. (40 marks)

4. A 2-year and 11-month-old girl with a history of recurrent fever, upper respiratory tract infections, body aches and pains, was investigated at the local hospital. She was found to have pancytopenia and further investigations confirmed the diagnosis of Severe Aplastic Anaemia (SAA). She had several transfusions of red cells and platelets during the last three months. Patient was transferred to the Tertiary care hospital due to poor response to platelet transfusions.

- 4.1. What could be the reasons for poor response to platelet transfusions? (30 marks)
- 4.2. Discuss the platelet transfusion management of this patient. (70 marks)

5. A 22-year-old woman presented to the Emergency Treatment Unit with high fever and weakness on exertion. Five days ago, she was discharged from the hospital after undergoing an uneventful caesarean section. Her full blood count revealed that she is anaemic, with a Hb of 5.2 g/dl (versus 11 g/dl at the time of her surgery). Her peripheral blood smear reveals microspherocytes.

Her antibody screen is negative.

Direct antiglobulin test (DAT) and eluate results are summarized below:

Test	Results
DAT with polyspecific AHG	3+
DAT with IgG AHG	3+
DAT with C3d AHG	1+
Elution	Negative with antibody screening cells

On inquiry, it was revealed that she was treated for recurrent urinary tract infection (UTI).

- 5.1. Explain your differential diagnoses with reasons. (40 marks)
- 5.2. What is the most possible diagnosis of this patient? (10 marks)
- 5.3. Briefly explain the pathogenesis of the diagnosis mentioned in 5.2. (30 marks)
- 5.4. What is your advice to the clinician? (20 marks)
- 6.
- 6.1. Outline the process of erythropoiesis including its regulation in an adult. (40 marks)
- 6.2. A 52-year-old woman is awaiting a routine orthopaedic surgery. Her Hb is 7g/dl. She has been diagnosed with diabetes mellitus (DM) one year back and there are no other significant comorbidities. How would you investigate this patient to optimize her anaemia preoperatively? (60 marks)

7.

- 7.1. Briefly explain the steps taken by the National Blood Transfusion Services (NBTS) for maintaining and improving microbiological safety of the blood supply. (50 marks)
- 7.2. List the limitations of 7.1. (30 marks)
- 7.3. Enumerate five (05) steps that would reduce the risk of emerging Transfusion Transmitted Infections. (20 marks)

8. A 60-year-old male patient with chronic kidney disease was admitted to a surgical ward for wound toilet. During pre-operative assessment, his Hb was 6.9g/dl but there were no symptoms due to anaemia. Treating consultant requested 1 unit of red cell concentrate (RCC) transfusion prior to surgery. One unit of RCC was issued at 6.30 p.m. Next day morning, house officer informed blood bank that the patient expired during the blood transfusion.

- 8.1. List important information you would gather to find out the relationship of transfusion to this death. (40 marks)
- 8.2. What are the differential diagnoses you would consider? (10 marks)
- 8.3. Comment on the above red cell transfusion episode. (25 marks)
- 8.4. What measures would you take to improve the transfusion safety in this ward? (25 marks)