# Specialist Certificate in Clinical Transfusion Practice

## Appendix 1: Unit Descriptors

### Unit 1 - Essential haematology and transfusion (10 credits)

#### Indicative Content

In this Unit, you will learn about:

A. Red cell physiology
B. Haemostasis and platelet physiology
C. Pathology of anaemia and haematological diseases *(overview)*
D. Management of blood components in the hospital: *Part 1 (standard routine practices)*
E. Epidemiology of blood transfusion
F. Adverse effects of transfusion – *Part 1 (overview)*

#### Learning Outcomes

You will be expected to:

1. Outline, describe, determine, explain and classify the key features of red cell physiology with respect to the bone marrow, erythropoietin and red cell production, iron composition, function, contents, lifespan, and senescent destruction
2. Describe, explain and classify the vascular system with respect to the arteries, capillaries, veins, lymphatics and cardiac output, distribution of blood volume, flow and blood pressure control
3. Describe, explain and categorise the key features of haemostasis and platelet physiology with respect to platelet production, lifespan, function, use of antiplatelet agents, the coagulation proteins/cascade including use of anticoagulant agents (heparin/ warfarin/ DOACs)
4. Describe, explain and categorise point-of-care viscoelastic tests of coagulation
5. Describe, explain and categorise basic haematology laboratory tests with respect to blood cell counts and blood cell morphology
6. Describe, explain and classify the pathology of anaemia and a range of haematological diseases including haemoglobinopathies and thalassaemias, leukaemias and lymphomas, aplastic anaemia and haemostatic disorders
7. Describe, categorise and explain the management of blood components in the hospital setting with respect to transfusion laboratory storage and their transport and temperature control outside the transfusion laboratory
8. Describe, categorise and explain the administration of different component types, from prescription to completion of the transfusion episode
9. Describe, explain, interpret and predict the epidemiology of blood transfusion with respect to blood use in the UK. Compare and contrast the UK with international practices
10. Determine, explain, classify, demonstrate and predict the adverse effects associated with various aspects of blood transfusion with respect to non-infectious and infectious types; including mechanics, cause, recognition of signs and symptoms. Justify reactive, proactive and preventative measures to avoid known types and emerging infections

## Unit 2 – Transfusion Therapy (20 credits)

### Indicative Content

In this Unit you will learn about

A. Transfusion in Surgery and Critical Care
B. Transfusion in Medical Patients
C. Obstetric Transfusion
D. Transfusion in Children
E. Transfusion in Transplantation Medicine

### Learning Outcomes

You will be expected to:

1. Describe, explain, categorise the following with respect to transfusion in surgery, and evaluate and recommend management strategies for
    a. Pre-operative assessment including anaemia and coagulation problems
    b. Cell salvage and blood sparing surgery
    c. Acute bleeding
    d. Post-operative transfusion thresholds
    e. Cardiac surgery and bypass
2. Describe, explain, categorise the routine and/ or restrictive use of red cell/ platelets/ plasma with respect to transfusion in critically ill patients. Evaluate and explain transfusion triggers and threshold; recommend management strategies
3. Describe and explain the following with regard to major haemorrhage for a range of different patient groups
    a. The physiology of shock and trauma induced coagulopathy
    b. The acute management of major haemorrhage including pharmacological treatments and transfusion management
    c. The use of near patient testing in major haemorrhage
    d. Emergency transfusion outside the hospital setting and selection of appropriate blood components
4. Evaluate and recommend transfusion management strategies for a range of inherited haemoglobinopathies.
5. Determine and explain the problems associated with chronic transfusion such as iron overload in haematological diseases
6. Describe, evaluate and recommend strategies for transfusion management of patients with warm and cold auto-immune haemolytic anaemia, autoimmune thrombocytopenic purpura (AITP) bleeding, thrombotic thrombocytopenic purpura (TTP), haemolytic uremic syndrome (HUS), microangiopathic haemolytic anaemia (MAHA)
7. Describe, explain, categorise the use of blood components in cancer (oncology and leukaemia) patients with respect to red cells, platelets, granulocytes. Evaluate specific transfusion triggers/ thresholds and beneficial effects of transfusion. Recommend management strategies including recommendations for resolving transfusion-associated problems/ adverse effects of transfusion and alternatives to transfusion
8. Outline, describe, explain, and categorise anaemias and haematological disease occurring in pregnancy (including HELLP, TTP, and SCD). Describe, evaluate and recommend strategies for their management
9. Determine, describe, explain and investigate the features and cause of, and problems associated with, obstetric massive transfusion, antepartum haemorrhage and postpartum haemorrhage. Outline, explain and evaluate treatment options including use of blood components
10. Outline, describe and explain the causes and effect of haemolytic disease of the fetus/ newborn (HDFN). Describe, evaluate and recommend strategies for clinical management of women with clinically significant red cell antibodies in pregnancy, and of the affected fetus/neonate including intrauterine and exchange transfusion

11. Determine, describe and explain the design, operation and performance of anti-D Ig prophylaxis for the prevention of immune anti-D formation in D negative females
12. Describe, categorise and explain the particular management and administration of blood component transfusion in children including neonatal transfusion and differing stages of prematurity
13. Explain and categorise the principles and practice of transfusion support in haemopoietic stem cell and solid organ transplantation patients including pre-, peri-/ 'during', post-treatment management and guidelines

## Unit 3 - Transfusion management and organisational practice (15 credits)

### Indicative Content

In this Unit you will learn about:

A. Adverse effects of transfusion – *Part 2 (clinical management and haemovigilance)*
B. Management of blood components in the hospital: *Part 2 (specialist/ specific practices/ role of IT)*
C. Alternatives and adjuncts to transfusion
D. Therapeutic Apheresis
E. Quality, regulation and clinical audit with respect to the clinical area
F. Transfusion Liaison *(the role of the haematology and transfusion laboratories, transfusion practitioner and clinical area/ user interactions and communication)*
G. Transfusion practices outside the UK

### Learning Outcomes

You will be expected to:

1. Determine, classify, explain adverse effects of transfusion in, and discuss the clinical management of, acute and delayed cases of
    a. ABO and other haemolytic reactions
    b. Pulmonary problems TACO, TRALI
    c. Allergic/febrile reactions, IgA deficiency
    d. Transfusion associated Graft versus host disease
    e. Infectious complications of transfusion (e.g. bacterial, viral, prion, protozoan)
2. Outline, describe, explain, discuss and evaluate the principles and mechanisms of 'vein to vein' traceability, including requirements for electronic issue, blood tracking systems and remote issue
3. Determine, describe and categorise the design, operation and performance of haemovigilance and reporting schemes in transfusion
4. Determine, describe and categorise the design, operation and performance of blood components management systems in the hospital including appropriate use, waste minimisation and special/ specific requirements
5. Identify, describe, explain, categorise the development and use of alternatives and adjuncts to transfusion including patients who refuse transfusion or where transfusion is not possible
6. Explain, describe and categorise the principles and practice of Therapeutic Apheresis for a range of conditions/ situations
7. Identify, explain and categorise quality and regulation with respect to the clinical area including the principles and practice of clinical audit and various regulatory bodies (e.g. MHRA/ SaBTO/ CQC)
8. Outline, describe, explain, discuss and evaluate the principles and mechanisms of effective Transfusion Liaison protocols/ requirements affecting, and within, the clinical setting
9. Determine, describe and explain provision of non-acute transfusion services outside the hospital setting
10. Determine, describe, compare and categorise the design, operation and performance of transfusion practices outside the UK including the EU and in developing countries

## Generic Learning Outcomes

### Intellectual skills

1. Critically analyse clinical data
2. Evaluate results commonly encountered in clinical transfusion practice areas
3. Apply knowledge of clinical transfusion to address specific problems

### Practical skills

1. Present information clearly in the form of verbal and written reports
2. Communicate complex ideas and arguments in a clear, concise and effective manner

### Transferable skills and personal qualities

1. Present complex ideas in simple terms in written format
2. Consistently operate within sphere of personal competence and level of authority
3. Select and apply appropriate analysis or assessment techniques and tools
4. Actively seek accurate and validated information from all available sources
5. Evaluate a wide range of data to assist with judgements and decision making
6. Interpret data and convert into knowledge for use in the clinical context of individual and groups of patients and donors
7. Work in partnership with colleagues, other professionals, donors, patients and their carers to maximise patient/ donor care