



Module Specification

Applied Transfusion Science

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Part 1: Information

Module title: Applied Transfusion Science

Module code: USSJNK-30-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: NHS Blood and Transplant

Field: Applied Sciences

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: Yes

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module focuses on blood transfusion. Understanding and application of laboratory transfusion practice and clinical application process is underpinned by knowledge of the pre-requisite biology and pathophysiology of the haematopoietic system.

Features: Not applicable

Educational aims: This module aims to provide students with an in-depth knowledge of the theory and practice of blood transfusion. On completion of the module, students will have a sound understanding of haematopoiesis and haemostasis; clinical laboratory practice and management of blood transfusion therapy.

Outline syllabus: An indicative syllabus typically includes:

The biology of blood transfusion:

An introduction to haematopoiesis and haemostasis, including the biology of red cells, white cells and platelets and normal haemostasis.

Routine haematology and haemostasis, including thromboelastography testing.

Selected haematological disorders including malignant/non-malignant, those affecting haematopoiesis and haemostasis (Including congenital and acquired - haematological disorders affecting red cells, white cells and platelets in antenatal, neonatal and adult patients)

An introduction to the immunological basis for transfusion, histocompatibility and immunogenetics in blood transfusion.

Laboratory aspects of blood transfusion:

Transfusion laboratory practice and pre-transfusion testing.

The clinical relevance of blood group systems, their antigens and antibodies.

Principles of basic and advanced blood group serological techniques within the hospital and reference laboratory setting.

Genotyping and transfusion: Donor/patient platforms, when and why this is performed and resolving discrepancies. 'Big Data' and transfusion.

Overview of clinical bioinformatics, genomics and personalised medicine.

Blood stocks management.

The process of blood transfusion (vein to vein):

Donor recruitment, selection and the donation process.

Preparation, testing, labelling and storage of donated blood components.

Legislation and guidelines for blood donation, testing, processing and storage.

Requesting, testing, selection, consent, issue and administration of blood

components in the hospital including reference to relevant guidelines.

Transfusion transmitted infections:

Basis and application of serological and nucleic acid testing for the detection of transfusion transmitted infection.

Microbiological testing of materials for transfusion and transplantation.

Pathogen reduction strategies.

Relevant legislation and guidelines for microbial testing and management.

Blood transfusion therapy:

Indications for transfusion; red cells, platelets, plasma, other components and manufactured therapeutics including reference to relevant guidelines.

Therapeutic apheresis: theory, practice and indications for its use, including reference to relevant clinical guidelines.

Special requirements for patient groups and conditions including antenatal, neonatal, paediatric, adults and immunosuppressed patients.

Advances in transfusion science e.g. components, processes and treatments.

Management of blood transfusion therapy:

Transfusion in the clinical setting e.g. obstetrics, surgical and medical including massive haemorrhage, haematological and solid organ transplant with relevance to relevant guidelines.

Adverse reactions to transfusion of blood components and products (infectious and non-infectious) and the underlying pathogenesis, testing, prevention and diagnosis of these reactions.

Patient blood management (including management of transfusion and alternatives to transfusion therapy).

Haemovigilance, Serious Hazards of Transfusion (SHOT) and the Medicines and Healthcare Products Regulatory Agency (MHRA).

Part 3: Teaching and learning methods

Teaching and learning methods: Teaching will be delivered in blocks with additional tutorials and interactive lectures. Face-to-face teaching will include practical classes, case studies and scenario-based teaching, using tools such as Resimion.

Teaching will be practice-led, embedding the application of transfusion science theory, together with current clinical management of blood transfusion therapy.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Critically discuss the processes involved in the maintenance of blood composition and function, the biology of blood transfusion and the pathophysiology of selected haematological disease states.

MO2 Critically discuss the processes involved in ensuring patients receive safe blood and evaluate the different strategies employed.

MO3 Interpret and refer to appropriate legislation and clinical guidelines in transfusion medicine.

MO4 Critically discuss the strategies which underpin the optimal utilisation of donated blood.

MO5 Correctly interpret results from patient serological and/or genotyping testing, evaluating options for follow-up investigations on patients, and discussing suitable therapies

MO6 Utilise appropriate laboratory methods and accurately employ data analysis or data interpretation.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://rl.talis.com/3/uwe/lists/899701DA-C541-CE9F-623E-4E0439A9D448.html?lang=en-GB&login=1) via the following link <https://rl.talis.com/3/uwe/lists/899701DA-C541-CE9F-623E-4E0439A9D448.html?lang=en-GB&login=1>

Part 4: Assessment

Assessment strategy: Written examination (50%)

A portfolio of laboratory case studies (50%)

The written examination will assess the student's knowledge on the breadth of the syllabus and evidence their ability to critically analyse and apply current research literature and clinical guidelines. This assessment will feed forward into the examination assessment for Applied Transplantation Science and will be supported by revision tutorials.

The portfolio will evidence interpretation of data obtained in laboratory practical classes and understanding of practical application of theoretical concepts, which are critical skills for transfusion specialists. Students will be supported in this assessment by in-session guidance from the teaching team and formative feedback on work completed in the initial practical session.

Assessment tasks:

Examination (Online) (First Sit)

Description: Online Exam (2 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Portfolio (First Sit)

Description: A portfolio of laboratory case studies (2500 words)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO5, MO6

Examination (Online) (Resit)

Description: Online Exam (2 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Portfolio (Resit)

Description: A portfolio of laboratory case studies (2500 words)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO5, MO6

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Applied Transfusion and Transplantation Science [Frenchay] MSc 2023-24

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