Universitat Autònoma de Barcelona

2021/2022

Immunohaematology

Code: 43318
ECTS Credits: 10

Degree	Type	Year	Semester
4314643 Transfusion Medicine and Advanced Cell Therapies	OB	0	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: english (eng)

Other comments on languages

The working language is English but the use of Spanish is also allowed. The course material will also be in English.

Teachers

Eduard Palou Rivera

Eduardo Muñiz Díaz

Masja de Haas

Porcelijn Leendert

Prerequisites

Level B2 or equivalent in English.

Objectives and Contextualisation

In this module on IH we will study blood groups, their classification, structure and function. We will also study the clinical immunity complications mediated by antierythrocyte antibodies(haemolic disease in newborns), platelets (foetal/neonatal aloimmune thrombocytopaenia, post transfusion purpura) and granulocytes (neonatal aloimmune and autoimmune neutropoenia, TRALI).

We will review the techniques used for determining antibodies against different blood cells and for the classification (serological, molecular) of blood groups. Finally we will look at the HLA systems and the clinical implications will be reviewed in the field of transplants.

Competences

- Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
- Continue the learning process, to a large extent autonomously.

- Define laboratory strategies for the diagnosis of haemolytic disease, immune and haematologic cytopenias, and other immune-(adverse) effects of the transfusion.
- Design and develop research using appropriate methodologies.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Learning Outcomes

1. Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
2. Continue the learning process, to a large extent autonomously.
3. Create an algorithm for each case.
4. Design and develop research using appropriate methodologies.
5. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
6. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
7. Understand the basics of immunohaematology and basic techniques used to diagnose immune processes related to erythrocytes, granulocytes and platelets.
8. Understand the use of the HLA system and its relationships in the context of distinct diseases.
9. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Content

1. Introduction.

1.1 Key concepts in immunohematology.

2. IH-Erythrocyte.

2.1 Systems of blood groups of erythrocytes.

2.2 Biological importance of blood groups of erythrocytes.

2.3 Molecular techniques in immunohematology.

2.4 Autoimmune haemolytic anaemia.

2.5 Haemolytic disease in newborns: diagnosis and prevention.

3. IH-platelet.

3.1 Systems of platelet blood groups and study techniques.

3.2 Thrombocytopenia: diagnosis and prevention.

3.3 Post-transfusion purpura and other aloimmune thrombocytopaenia.

3.4 Refractarity in platelet transfusion.

4. IH-Granulocyte.

4.1 Systems of blood groups of granulocytes and study techniques.

4.2 Aloimmune neonatal granulocytopoenia and autoimmune granulocytopoenia.

4.3 Transfusion related lung injury (TRALI).

5. HLA system.

5.1. HLA molecules. Structure and function.

5.2 Alorecognition and rejection.

5.3 Classification techniques.

5.4 HLA and transplant.

5.5 HLA and disease.

Methodology

The methodology for this course is active and constructive. It does not only contemplate the content but also reading, reflecting and applying knowledge to reasonably close situation to create meaningful learning.

Students will work on real life examples and case studies, reflecting on complex and relatively unstructured situations to find adequate solutions.

Faithful to the proposed methodology, students form the centre of the learning process and generate knowledge by interacting significantly with their peers, with the teaching materials and with the environment. This programme not only teaches training in a virtual environment but also allows them to experience their learning every day.

At the beginning of the unit, the teacher will present a learning plan to the group with specific objectives, learning activities, the necessary resources and recommended deadlines for each activity.

The dates for carrying out the activities are recommended in order to be able to follow the course. The only fixed dates are the beginning and end of each teaching unit. This means that students can do their own planning but they must respect the dates for the beginning and the end of each unit.

Students are recommended to work in a continuous and consistent manner and not allow tasks to accumulate around the deadlines, which may lead to haste, undue time pressure and not allow the students to enjoy their learning or carry out additional reflections. Also the course offers group activities which require synchronisation among the group.

Some of the activities must be send online to the teacher for assessment and receive feedback of progress. Teachers will return the work with comments and together the students can continue to think and learn. The deadline for each of these activities is the end of the teaching unit. Other activities will consist in discussion and working together in shared spaces.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Discussions in the Virtual Campus	30	1.2	8, 3, 4, 5, 6, 1, 2, 9
Type: Supervised			
Elaboration of projects	22.5	0.9	8, 3, 4, 5, 6, 1, 2, 9
Virtual cases/Problem solving	22.5	0.9	8, 3, 4, 5, 6, 1, 2, 9
Type: Autonomous			

Personal study	25	1	7, 8, 3, 4, 5, 6, 1, 2, 9
Reading articles/Reports of interest/Videos	25	1	7, 8, 3, 4, 5, 6, 1, 2, 9
Test/Scheme	25	1	7, 8, 3, 4, 5, 6, 1, 2, 9

Assessment

The module will be assessed on the following activities:

1. Exercise 1: Design a comparative study of the prophylactic programmes with anti-D immunoglobulin in different countries. This activity counts for 5% of the final grade.

2. Exercise 2: Describe the procedures for prenatal testing in the country of the student. This activity counts for 9% of the final grade.

3. Exercise 3: Two case studies (AIHA and HDN). This activity counts for 13.5% of the final grade.

4. Exercise 4: Individual multiple choice test. 13.5 % of the final grade.

5. Exercise 5: Open discussion. This activity counts for 9% of the final grade.

6. Exercise 6: Two case studies (FNAIT and RPT). This activity counts for 4% of the final grade.

7. Exercise 7: Open discussion. This activity counts for 8% of the final grade.

8. Exercise 8: Individual multiple choice test. This test counts for 4% of the final grade.

9. Exercise 9: Open discussion. This activity counts for 4% of the final grade.

10. Exercise 10: Case study (ANG). This activity counts for 5% of the final grade.

11. Exercise 11: Individual multiple choice test. This test counts for 5% of the final grade.

12. Exercise 12: Individual multiple choice test. This test counts for 20% of the final grade.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exercise 1, 2, 3 and 4	45%	10	0.4	7, 4, 5, 6, 1, 2, 9
Exercise 12	20%	20	0.8	3, 4, 5, 6, 1, 2, 9
Exercise 5, 6, 7 and 8	20%	40	1.6	8, 3, 4, 5, 6, 1, 2, 9
Exercise 9, 10 and 11	15%	30	1.2	8, 4, 5, 6, 1, 2, 9

Bibliography

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