

Blood Donation

Code: 44436
ECTS Credits: 9

Degree	Type	Year	Semester
4317563 Transfusion Medicine and Cellular and Tissue Therapies	OB	0	1

Contact

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Use of Languages

Principal working language: english (eng)

Other comments on languages

The primary language used during the course will be English. However, the use of Spanish will also be allowed. The course materials will also be in English.

Teachers

Sílvia Sauleda Oliveras

Arturo Pereira Saavedra

Prerequisites

Level B2 in English or equivalent.

Objectives and Contextualisation

In this module students study the complete process of blood donation: promoting donation, donation procedures (donor selection criteria, apheresis, complete blood donation), laboratory analysis of blood and finally different methods for obtaining blood components for transfusion.

Competences

- Design safe strategies in the donation process and in the preparation of blood products in accordance with European regulations.
- Integrate scientific and technical knowledge in accordance with a commitment to ethics and the code of conduct.
- Students can communicate their conclusions and the knowledge and rationale underpinning these to specialist and non-specialist audiences clearly and unambiguously.
- Take reasoned decisions based on critical, objective analysis.
- That students are able to integrate knowledge and handle complexity and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments.
- To manage blood, cell, and tissue donations ethically and efficiently.

Learning Outcomes

1. Analyse and plan donor promotion and donation actions based on donor feedback comments.
2. Classify distinct types of donation and the factors affecting the quality of the blood product.
3. Describe different methodologies for the production of blood products.
4. Describe the quality indicators of blood products.
5. Design donor interviews and physical examinations based on scientific and medical consensus criteria.
6. Identify and describe the key variables and needs for donor selection and donor loyalty.
7. Identify the fundamental concepts of European donation regulation and how they apply to daily practice.
8. Integrate scientific and technical knowledge in accordance with a commitment to ethics and the code of conduct
9. Interpret the meaning of different infectious markers.
10. Select and apply donor inclusion/exclusion criteria according to country regulations.
11. Students can communicate their conclusions and the knowledge and rationale underpinning these to specialist and non-specialist audiences clearly and unambiguously.
12. Take reasoned decisions based on critical, objective analysis
13. That students are able to integrate knowledge and handle complexity and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments.

Content

1. Promotion of blood donation.
2. Blood donation.
3. Blood donation laboratory.
4. Preparation of blood components.

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 sent 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.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Discussions	15	0.6	6, 13, 11
Type: Supervised			
Case Studies	15	0.6	1, 11, 10
Elaboration of Projects	15	0.6	6, 9, 11
Type: Autonomous			
Exam	10	0.4	1, 2, 3, 4, 5, 7, 6, 9, 10
Personal Study	15	0.6	1, 2, 3, 4, 5, 7, 6, 9, 13, 11, 10
Reading Articles/Reports of Interest/Videos	10	0.4	1, 2, 3, 4, 5, 7, 6, 9, 13, 11, 10

Assessment

The module will be assessed on the following activities:

1. Open discussion. Recruitment of donors. This activity counts for 25% of the final grade for module 1. Students are expected to discuss different strategies for recruiting donors and researching normal practices in their countries of origin.
2. The SOP for blood donation. This activity counts for 12.5% of the final grade for module 1. Students must offer standard operating procedures with stages for the traceability of the donor.
3. Scheme. This activity counts for 12.5% of the final grade for module 1. Students must provide a brief description of the critical stages in this process relating to the quality and safety of the donor and the safety and effectiveness of the blood product.
4. Algorithm. This activity counts for 25% of the final grade for module 1. Students are expected to discuss the available safety strategies with respect to the transmission of infectious diseases according to different scenarios.
5. Multiple choice test. This test counts for 25% of the final grade for module 1. The objective of the test is to see whether students are familiar with the quality control procedures for blood components.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
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Algorithm	25%	40	1.6	2, 7, 8, 9, 12
Multiple Choice Test	25%	25	1	3, 4
Open Discussion	25%	15	0.6	13, 11
Scheme	12,5%	40	1.6	1, 2, 3, 4, 5, 7, 6, 8, 9, 12, 13, 11, 10
The SOP for Blood Donation	12,5%	25	1	1, 5, 6, 10

Bibliography

AABB. Standards for Blood Banks and Transfusion Services, 33rd edition. AABB Press, 2022.

AABB. Fundamental Standards for Blood Collection and Transfusion, 1st edition. AABB Press, 2018 (Free copy available in: <https://www.aabb.org/standards-accréditation/standards/fundamental-standards-for-blood-collection-and-transfus>)

AABB. Technical Manual, 20th edition. AABB Press 2020.

European Committee on Blood Transfusion. Guide to the preparation, use and quality assurance of blood components. Council of Europe, 2020. (Free copy available in: <https://freepub.edqm.eu/publications>)

Sümnig A, Feig M, Greinacher A, Thiele T. The role of social media for blood donor motivation and recruitment. Transfusion 2018; 58(10): 2257-2259. <https://doi.org/10.1111/trf.14823>

Ferguson E, Hill A, Lam M et al. A typology of blood donor motivations. Transfusion 2020; 60 (9):2010-2020. <https://doi.org/10.1111/trf.15913>

Ferguson E. Strategies and theories to attract and retain blood donors: fairness, reciprocity, equity and warm-glow. ISBT Sci Ser 2021; 16(3): 219-225. <https://doi.org/10.1111/voxs.12640>

Bruers S. Blood donation and monetary incentives: a meta-analysis of cost-effectiveness. Transfus Med Rev 2022; 36(1): 48-57, <https://doi.org/10.1016/j.tmr.2021.08.007>.

Pereira A. The economics of blood transfusion in the 21st century. ISBT Sci Ser 2007; 2(1): 184-188. <https://doi.org/10.1111/j.1751-2824.2007.00087>.

Greinacher A, Weitmann K, Schönborn L et al. A population-based longitudinal study on the implication of demographic changes on blood donation and transfusion demand. Blood Adv 2017; 1(4): 867-874. <https://doi.org/10.1182/bloodadvances.2017005876>

Williamson LM, Devine DV. Challenges in the management of the blood supply. Lancet 2013; 381: 1866-1875.

Almizraq RJ, Norris PJ, Inglis H et al. Rugavvah Blood manufacturing methods affect red blood cell product characteristics and immunomodulatory activity. Blood Adv 2018; 2 (18): 2296-2306. <https://doi.org/10.1182/bloodadvances.20180219>.

Rebulla P. The long and winding road to pathogen reduction of platelets, red blood cells and whole blood. *Br J Haematol* 2019; 186(5):655-667. <https://doi.org/10.1111/bjh.16093>.

Levy JH, Neal MD, Herman JH. Bacterial contamination of platelets for transfusion: strategies for prevention. *Crit Care* 2018; 22: 271. <https://doi.org/10.1186/s13054-018-2212-9>.

Grégoire Y, Delage G, Custer B, et al. Cost-effectiveness of pathogen reduction technology for plasma and platelets in Québec: A focus on potential emerging pathogens. *Transfusion* 2022; 62(6): 1208-1217. <https://doi.org/10.1111/trf.16926>.

Sanz, Nomdedeu M, Pereira A et al. Efficacy of early transfusion of convalescent plasma with high-titer SARS-CoV-2 neutralizing antibodies in hospitalized patients with COVID-19. *Transfusion* 2022; 62(5): 974-981. <https://doi.org/10.1111/trf.16863>.

Doughty H. Whole blood in disaster and major incident planning. *ISBT Sc Ser* 2019; 14(3): 323-331. <https://doi.org/10.1111/voxs.12503>.

Guidance on increasing supplies of plasma-derived medicinal products in low- and middle-income countries through fractionation of domestic plasma. World Health Organization, 2021. (Free copy available in: <https://apps.who.int/iris/bitstream/handle/10665/340171/9789240021815-eng.pdf>)

de Mendoza C, Caballero E, Aguilera A et al. Human T-lymphotropic virus type 1 infection and disease in Spain. *AIDS* 2017; 31(12): 1653-1663. <https://doi.org/10.1097/QAD.0000000000001527>.

Riveiro-Barciela M, Rando-Segura A, Barreira-Díaz A et al. Unexpected long-lasting anti-HEV IgM positivity: Is HEV antigen a better serological marker for hepatitis E infection diagnosis?

J Viral Hepat 2020; 27(7):747-753. <https://doi.org/10.1111/jvh.13285>.

Bes M, Costafreda MI, Riveiro-Barciela M et al. Effect of Hepatitis E Virus RNA Universal Blood Donor Screening, Catalonia, Spain, 2017–2020. *Emerg Infect Dis* 2022;28(1):157-165. doi: 10.3201/eid2801.211466.

Costafreda MI, Sauleda S, Rico A, Piron M, Bes M. Detection of Nonenveloped Hepatitis E Virus in Plasma of Infected Blood Donors. *J Infect Dis* 2021; jia589. <https://doi.org/10.1093/infdis/jiab589>.

Crowder LA, Wendel S, Bloch EV et al. International survey of strategies to mitigate transfusion-transmitted *Trypanosoma cruzi* in non-endemic countries, 2016-2018. *Vox Sang* 2022; 117(1):58-63. <https://doi.org/10.1111/vox.13164>.

Busch MP, Bloch EV, Kleinman S. Prevention of transfusion-transmitted infections. *Blood* 2019;133(17):1854-1864. <https://doi.org/10.1182/blood-2018-11-833996>.

Dean CL, Wade J, Roback JD. Transfusion-Transmitted Infections: an Update on Product Screening, Diagnostic Techniques, and the Path Ahead. *J Clin Microbiol* 2018;56(7):e00352-18. <https://doi.org/10.1128/JCM.00352-18>.

Ahmadpour E, Foroutan-Rad M, Majidiani H et al. Transfusion-Transmitted Malaria: A Systematic Review and Meta-analysis. *OFID* 2019;6(7):ofz283. <https://doi.org/10.1093/ofid/ofz283>.

Kiely P, Gambhir M, Cheng AC, McQuilten ZK, Seed CR, Wood EM. Emerging Infectious Diseases and Blood Safety: Modeling the Transfusion-Transmission Risk. *Transfus Med Rev* 2017;31(3):154-164.doi: 10.1016/j.tmr.2017.05.002.

World Health Organisation (WHO) Guideline on emerging diseases. 2019.

(Available in:<https://www.isbtweb.org/resource/world-health-organisation-who-emerging-diseases.html>)

Pruetta CR, Vermeulen M, Zacharias P et al. The Use of Rapid Diagnostic Tests for Transfusion Infectious Screening in Africa: A Literature Review. *Transfus Med Rev* 2015; 29(1):35-44. <https://doi.org/10.1016/j.tmr.2014.09.003>.

de Mendoza C, Caballero E, Aguilera A et al. Human T-lymphotropic virus type 1 infection and disease in Spain. *AIDS* 2017; 31(12): 1653-1663. <https://doi.org/10.1097/QAD.0000000000001527>.

Riveiro-Barciela M, Rando-Segura A, Barreira-Díaz A et al. Unexpected long-lasting anti-HEV IgM positivity: Is HEV antigen a better serological marker for hepatitis E infection diagnosis? *J Viral Hepat* 2020; 27(7):747-753. <https://doi.org/10.1111/jvh.13285>.

Bes M, Costafreda MI, Riveiro-Barciela M et al. Effect of Hepatitis E Virus RNA Universal Blood Donor Screening, Catalonia, Spain, 2017–2020. *Emerg Infect Dis* 2022;28(1):157-165. doi: 10.3201/eid2801.211466.

Costafreda MI, Sauleda S, Rico A, Piron M, Bes M. Detection of nonenveloped hepatitis E virus in plasma of infected blood donors. *J.Infect.Dis* 2021; jia589. <https://doi.org/10.1093/infdis/jia589>.

Crowder LA, Wendel S, Bloch EV et al. International survey of strategies to mitigate transfusion-transmitted *Trypanosoma cruzi* in non-endemic countries, 2016-2018. *Vox Sang* 2022; 117(1):58-63. <https://doi.org/10.1111/vox.13164>.

Busch MP, Bloch EV, Kleinman S. Prevention of transfusion-transmitted infections. *Blood* 2019;133(17):1854-1864. <https://doi.org/10.1182/blood-2018-11-833996>.

Dean CL, Wade J, Roback JD. Transfusion-Transmitted Infections: an Update on Product Screening, Diagnostic Techniques, and the Path Ahead. *J Clin Microbiol* 2018;56(7):e00352-18. <https://doi.org/10.1128/JCM.00352-18>.

Ahmadpour E, Foroutan-Rad M, Majidiani H et al. Transfusion-Transmitted Malaria: A Systematic Review and Meta-analysis. *OFID* 2019;6(7):ofz283. <https://doi.org/10.1093/ofid/ofz283>.

Kiely P, Gambhir M, Cheng AC, McQuilten ZK, Seed CR, Wood EM. Emerging Infectious Diseases and Blood Safety: Modeling the Transfusion-Transmission Risk. *Transfus Med Rev* 2017;31(3):154-164.doi: 10.1016/j.tmr.2017.05.002.

World Health Organisation (WHO) Guideline on emerging diseases. 2019 (Available in:
<https://www.isbtweb.org/resource/world-health-organisation-who-emerging-diseases.html>)

Pruetta CR, Vermeulen M, Zacharias P et al. The Use of Rapid Diagnostic Tests for Transfusion Infectious Screening in Africa: A Literature Review. *Transfus Med Rev* 2015; 29(1):35-44.
<https://doi.org/10.1016/j.tmr.2014.09.003>.

Software

No specific software for this Module.