

The European Hematology Curriculum: An Electronic Passport Promoting Professional Competence and Mobility

By A.M. Almeida¹, C. Ar², E. Hellström-Lindberg³, W.W.G. Hollegien⁴, J.T. Navarro⁵, M.T. Saris⁴, M.J. Wondergem⁶, C.H. Toh⁷

Correspondence: A.M. Almeida (e-mail: amalmeida@hospitaldaluz.pt).

A.M. Almeida¹

¹Hospital da Luz, Lisboa, Portugal

²Istanbul University Cerrahpasa Medical Faculty, Istanbul, Turkey

³Department of Medicine Center of Hematology and Regenerative Medicine, Karolinska Institutet, Karolinska University Hospital, Stockholm, Sweden

⁴European Hematology Association, Executive Office, The Hague, The Netherlands

⁵ICO-Hospital Germans Trias i Pujol, Jose Carreras Research Institute and PETHEMA Group, Badalona, Spain

⁶VU University Medical Center, Amsterdam, The Netherlands

⁷Royal Liverpool and Broadgreen University Hospitals NHS Trust and University of Liverpool, Liverpool, UK
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Hematology is a discipline that uniquely integrates clinical and laboratory practice across a broad spectrum of blood disorders. These range from common conditions such as anemia to rarer conditions such as leukemia and hemophilia. Furthermore, the boundaries of hematology overlap with many other specialties that include internal medicine, obstetrics, and pediatrics. In all areas, there is expanding knowledge in basic science and its translation into new diagnostics and therapeutics. This breadth and depth make hematology a complex and stimulating specialty, but also raise the challenge of achieving and maintaining professional competence.

In modern Europe, where an enormous cultural diversity coexists with economic unity and worker mobility, it is essential that training in a discipline such as hematology is harmonized. This goal is in consonance with the Brussels Declaration on the Recognition of Professional Qualifications signed by 27 national hematology societies in Europe and the European Hematology Association (EHA), which states that: “The mobility of hematology trainees is of the utmost importance. Mobility stimulates the exchange of knowledge and experience in a profession that has, in terms of research, literature and continuing education, already developed a decidedly international orientation. Moreover, the mobility of trainees from Member States that are challenged in their educational resources allows for increasing competence to the level of best practices in Europe.” In addition, there is significant population movement and migration across Europe that will alter local disease prevalence. As an example, red cell disorders common to Mediterranean countries are now managed in Scandinavian countries where such conditions had rarely been seen.

Harmonizing hematology training across Europe will therefore enable both professional motilities within Europe by ensuring equivalent professional competences by trainees from different countries but also elevating the knowledge and competence base of those remaining resident in their country of training. This will assure patients and healthcare systems of the professional competence of hematologists and ensure the availability of a shared platform to assess and improve the standards of hematology practice in Europe.

The European curriculum

The goal is a truly harmonized curriculum for European hematologists that can raise competence levels of hematologists as a group and ultimately improve patient care and public health. The first step in harmonizing hematology training is to stipulate the required fields of knowledge, each with its recommended level of competence. For this purpose, the European Network for Harmonization of Training in Hematology project (H-NET) established, under the guidance of EHA, a vast network of national and international societies of hematology, pedagogues, and informatics technology specialists. This pan-European project adopted a strict bottom-up approach in which national societies played an initiating and active role in its design and implementation.

Within the H-NET project, EHA, with the support of 27 national societies, developed the first Hematology Curriculum in 2006. This document details the different areas which hematologists are expected to cover during their training and expresses the minimum recommended levels of competence that a hematology trainee should attain on a consensual description of the scope of the specialty of hematology. In 2012, the original paper version was revised and improved to produce an online curriculum, thus greatly improving its accessibility and interactive utility.

Table 1**Competence Level Descriptors**

	Competence Levels		
	Level 1	Level 2	Level 3
	I Am Confident I Can:	I Am Confident I Can:	I Am Confident I Can:
Clinical skills (patient management and treatments)	Describe the clinical features and epidemiology of a condition OR indications for a specific treatment/procedure OR appropriateness/utility of a test Recognize a patient who may have this condition OR require this treatment OR benefit from this test	Describe the pathogenesis Identify clinical features and investigations required to diagnose condition and interpret test results correctly Describe prognosis Identify correct referral routes OR initiate appropriate treatment (according to established protocol) Identify the need for and establish urgent consultation with subspecialist (particularly if the condition has potentially life-threatening debut symptoms)	Decide and manage first-line treatment Identify treatment failure and need for second-line management Identify when there is a need for, and deliver, genetic counseling Seek out and integrate new knowledge and concepts in relation to condition/treatment
Laboratory skills	Recognize the appropriateness and utility of a specific test for diagnosing and follow-up of specific hematological conditions	Choose/order appropriate test(s) for a specific patient, taking into account: indications accuracy and limitations what is entailed for the patient in performing the test Interpret results for a specific patient	Create/issue an interpretative report of test results Select/justify tests according to their cost-effectiveness
Competences related to regulations and principles	Identify applicable regulations OR principles	Apply this regulation/principle relevantly and appropriately within my own clinical work	Explain regulation/principle in appropriate language to a non-specialist audience (patient or student/trainee) Seek out and integrate new knowledge and concepts in relation to regulation/principle Recognize and plan how to improve own limitations, and demonstrate improvement

Ever since the publication of the first version in 2006, the Curriculum has been the backbone of EHA's educational activities. It has been unique in outlining the topics hematologists should be familiar with and the depth of knowledge that is expected for each topic.

European curriculum passport version 3.0

The considerable developments in hematology since then along with evidence and feedback from a survey on the Curriculum¹ to inform a European strategy for targeted education in hematology² has led to the development of version 3 (CV3). The new version, revised by a panel of 16 European experts, contains an update of technology and factual knowledge, including novel diagnostic methods and treatment modalities. In addition, the definitions of competence levels have also been revised to reflect the fact that hematologists must attain clinical, laboratory, and regulatory competences (Table 1: competence levels).

However, the greatest improvement achieved in CV3 is its usability. Despite the fact that it can be downloaded in a pdf format, its features are optimized to be an internet tool (Fig. 1). The main features are:

1. Each section and subsection can be expanded or condensed to permit easier focus on a topic of interest.
2. A recommended level of competence has been attributed for each topic by experts.

3. Each subsection has a link to unique educational material, which includes webcasts, interactive clinical cases, and selected scientific articles.

Such a dynamic tool has multiple functions. First, CV3 itself serves as a training tool. It is currently available in English, French, German, Portuguese, and Spanish and is being translated into more languages, thereby facilitating access to as many hematologists as possible. This is in line with recommendations within the strategy for targeted education.² The newly defined competence levels enable hematologists to self-assess their knowledge and competences and subsequently compare their self-assessed levels to the recommended European levels. This facilitates the identification of gaps in knowledge, which can serve as the basis for identifying one's educational needs.

In addition to helping identify gaps in knowledge, through its links to unique educational material, CV3 permits training directed at deficient areas. The rich and diverse materials in the EHA Learning Center, which include congress webcasts, selected articles, expert interviews, self-testing clinical cases, among many others, are all tagged to the corresponding subsection of CV3 and can be accessed directly from the CV3 platform.

CV3 is also the basis for innovative interactive educational opportunities. These include a year-long Master Class program, during which young hematologists work in groups to solve laboratory, clinical and ethical aspects of clinical cases presented. The cases are selected to cover as much of the Curriculum as

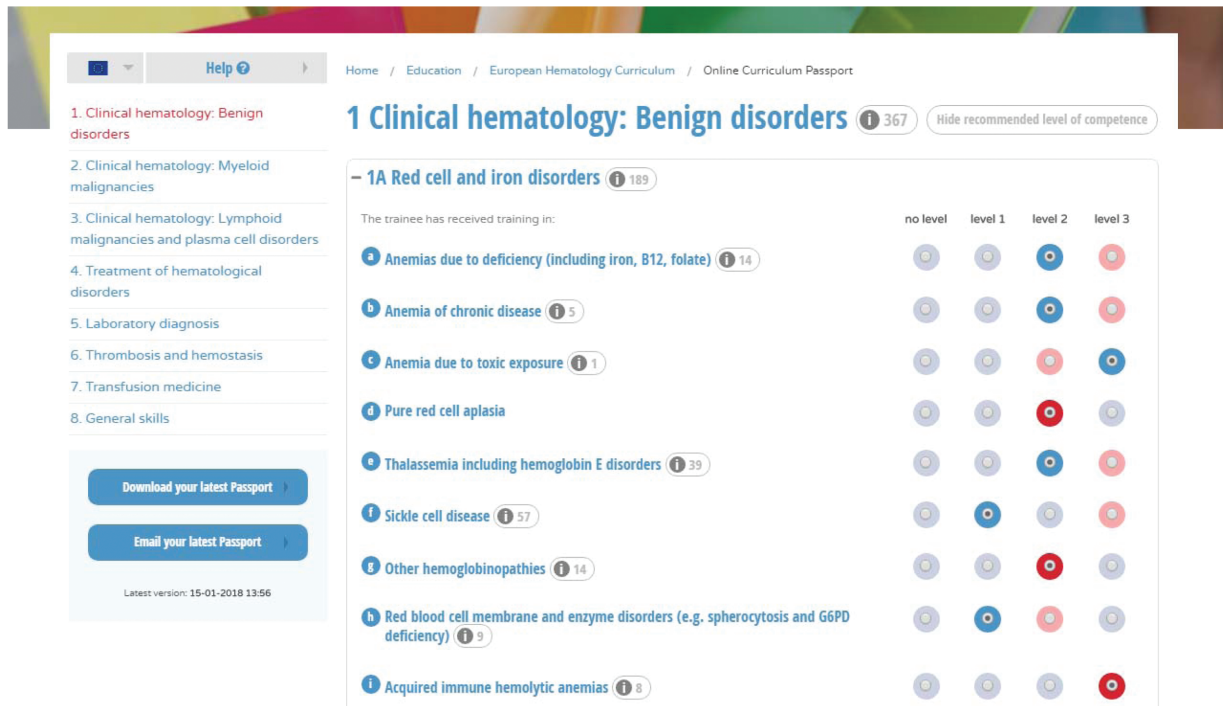


Figure 1. The online curriculum passport on ehaweb.org.

Table 2

List of Societies Which Co-Signed/Endorsed the Madrid Declaration

Co-Signing National Hematology Societies	Endorsements From
Austrian Society of Hematology and Medical Oncology	Acute Leukemia Advocates Network
Belgian Hematology Society	CML Advocates Network
Bulgarian Medical Society of Hematology	European Cancer Patient Coalition
Croatian Society of Hematology	European Federation of Associations of Patients with Hemochromatosis
Cypriot Society of Hematology	European Hemophilia Consortium
Czech Society of Hematology	EWMnetwork
Danish Society of Hematology	Hematology Nurses and Healthcare Professionals Group
Dutch Society of Hematology	ITP Support Association
Estonian Society of Hematology	Lymphoma Coalition
Finnish Society of Hematology	MDS Alliance
French Society of Hematology	MPN Advocates Network
Hellenic Society of Hematology	PNH Support UK
Hungarian Society of Hematology and Transfusiology	Thalassemia International Federation
Irish Hematology Society	
Italian Society of Hematology	
Latvian Hematology Society	
Lithuanian Society of Hematology	
Luxembourgish Society of Hematology	
Maltese Society of Hematology/College of Pathology	
Polish Association of Hematologists and Transfusiology	
Portuguese Society of Hematology	
Romanian Society of Hematology	
Slovak Society of Hematology and Transfusiology	
Slovenian Society of Hematology	
Spanish Society of Hematology and Hemotherapy	
Swedish Hematology Association	

feasible and there is a strong emphasis on diagnostic laboratory competences. There are also “bite-size” Master Classes, which last for 6 weeks and focus on a single topic, such as hemoglobinopathies or hemostasis.³

Hematologists are also encouraged to use the Curriculum Passport in their preparation for the European Hematology

Exam. This enables them to identify on which sections they should improve their knowledge, to pass the Exam.

With its multiple functions and accessibility, CV3 serves as a training basis for hematologists at all stages of their career, whether they are young trainees or senior physicians wishing to refresh and revalidate their knowledge.

The creation of the Curriculum Passport has brought to light the wide scope of hematology. This has led to the recommendation by EHA that the minimum length of training in hematology should be 5 years, which may include 1 or 2 years in internal medicine. This recommendation was formalized in the Madrid declaration of June, 2017, which was co-signed by 26 out of 28 European Union national societies and endorsed by 13 other professional and patient organizations (Table 2).

The European Hematology Exam

The European Hematology Exam emerged as a natural development of the educational and self-assessment features of CV3. It consists of 100 multiple-choice questions, chosen to represent the widest range of hematological topics as possible, with the Curriculum sections as a basis, and written mainly to question interpretation of concrete clinical scenarios. The questions are written taking into account the recommended knowledge level as defined in the Curriculum.

This initiative has generated great interest among the national societies, some of which are assessing using the European Exam as part of their national end of training assessment.

Anchored on its Curriculum, EHA has developed a broad and comprehensive educational program, which will facilitate the harmonization of hematology training in Europe. Its endorsement by 38 national societies is an important quality stamp on this version of the Curriculum. The close integration of laboratory and clinical aspects of hematology will help maintain the unique nature of our specialty, hopefully contributing to better patient care for those suffering from blood diseases.

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