Academic memory

1. Technical Data Sheet

Program Title:

State of the Art in Hemophilia: Self-Assessment Program.

Organizing Entity / Educational Provider:

Hygieia Learning Hub.

Exclusive Scientific Source:

Content extracted and adapted from the journal *Haemophilia* (Official Publication of the World Federation of Hemophilia -WFH- and the European Association for Haemophilia and Allied Disorders -EAHAD-).

Delivery Format:

100% Online Training (Interactive E-learning) + Live Kick-off Webinar.

Expected Dates of Edition:

From November 2026 to June 2027 (Platform open for 8 months).

Requested Accreditation:

Continuing Medical Education (CME) Credits from the Spanish National Health System (SNS) for healthcare professionals.

Requested Scientific Endorsements:

- World Federation of Hemophilia (WFH)
- European Association for Haemophilia and Allied Disorders (EAHAD)
- Spanish Society of Hematology and Hemotherapy (SEHH).
- Spanish Society of Thrombosis and Hemostasis (SETH).

Sponsorship / Educational Support (Unrestricted Educational Grant):

Program funded through an unrestricted educational grant. Sponsoring entities will not intervene in the pedagogical design, author selection, or independent scientific content of the program.

2. Program Overview

The educational program "State of the Art in Hemophilia: Self-Assessment Program" is an initiative of medical excellence driven by Hygieia Learning Hub. It is an advanced update course, structured in an interactive e-learning format, designed to guide the hematology specialist through one of the most disruptive therapeutic transitions in recent decades: the shift from classic replacement therapy to rebalancing agents.

Through a rigorous selection of scientific literature from the journal Haemophilia and other high-value pedagogical resources from the World Federation of Hemophilia, the program articulates a three-module curriculum. This ranges from precision genotypic characterization, through the clinical pharmacology of non-replacement therapies (Anti-TFPI monoclonal antibodies), culminating in the humanistic impact that the subcutaneous route brings to the chronic patient's biography.

The course will open with a high-level Kick-off Webinar and will be developed under a methodology based on Clinical Cases, Critical Debate, and tools for real-world applicability (Practice Insights), requiring constant evaluation (Self-Assessment) by the student to obtain certification.

3. Clinical Justification & Rationale

The clinical management of hemophilia (A and B) is at a historic turning point. Despite the undeniable advances achieved with recombinant factors and extended half-life (EHL) therapies, the burden of intravenous treatment, the impact on the vascular network, and the risk of inhibitor development remain significant challenges that limit the patient's quality of life and full autonomy.

In this context, the inhibition of the tissue factor pathway (TFPI) emerges as a revolutionary therapeutic paradigm. Newly developed molecules—such as the monoclonal antibodies marstacimab and concizumab—pose an unprecedented clinical scenario: hemostatic rebalancing. By blocking the physiological coagulation inhibitor, these subcutaneous therapies allow thrombin generation regardless of factor deficiency (VIII or IX) and the presence or absence of inhibitors.

Educational Needs of the Specialist: The imminent breakthrough of this innovation requires hematologists to update their competencies in three critical dimensions, which justify the comprehensive development of this program:

- Genomic Dimension: Current precision medicine requires understanding how the patient's genetic architecture influences the bleeding phenotype and helps predict the response to new systemic therapies.
- Pathophysiological and Clinical Dimension: It is imperative to master the new physiological mechanism of action, the interpretation of next-generation analytical metrics (such as Thrombin Generation Assays - TGA), and establish safe decision algorithms for the transition (switching) from standard intravenous prophylaxis to subcutaneous therapies.
- Humanistic and Integral Dimension: The drastic reduction of the "Treatment Burden" thanks to the subcutaneous route forces a rethinking of the doctor-patient relationship. The specialist needs to incorporate Shared Decision-Making (SDM) tools to accompany the patient in their transition from hospital dependence (Disease) to vital autonomy (Illness), empowering them in their professional, sports, and leisure projects.

Therefore, this educational activity is indispensable to ensure that specialists have the scientific training and "soft skills" necessary to lead this new era in the comprehensive treatment of coagulopathies.

4. Program Objectives

4.1 General Objective

To train the specialist in Hematology and Hemotherapy in the comprehensive clinical management of hemophilia under the new paradigm of rebalancing agents (Anti-TFPI), providing them with the necessary tools to integrate precision genomic medicine with a humanistic approach focused on reducing the treatment burden and fostering patient autonomy.

4.2 Specific Objectives

To achieve the general objective, the program proposes the acquisition of the following specific competencies:

Pathophysiological and Genetic Knowledge:

- Understand the influence of genetic architecture on the bleeding phenotype of the hemophilia patient.

- Identify and interpret the findings of Next-Generation Sequencing (NGS) tools to predict the risk of inhibitor development and the response to new therapies.

Clinical and Therapeutic Management:

- Analyze the efficacy, safety, and mechanism of action of hemostatic rebalancing mediated by anti-TFPI monoclonal antibodies (marstacimab and concizumab) based on the latest evidence from phase 3 trials.
- Practically interpret advanced monitoring analytical metrics, with special emphasis on Thrombin Generation Assays (TGA).
- Apply evidence-based clinical decision algorithms to perform a safe transition (switch) from intravenous replacement therapies to subcutaneous prophylaxis with rebalancing agents.

Humanistic and Communication Skills (Soft Skills):

- Incorporate advanced communication strategies and Narrative Medicine to empathetically manage genetic counseling in the clinical consultation.
- Apply the Shared Decision-Making (SDM) model to involve the patient in choosing their therapy, evaluating its impact through Patient-Reported Outcomes (PROs).
- Transform the technical advantage of subcutaneous administration into action plans that empower the patient to achieve their life projects (sports, travel, workforce insertion), minimizing the Treatment Burden.

5. Estructura y Contenidos Académicos

The program is structured into three main modules, designed under a progressive learning model. Each module guarantees the comprehensive acquisition of competencies through a standardized instructional design (UX) consisting of 8 mandatory pedagogical sections for the student.

Module 1: Precision Genetics: The Foundation of the New Hematology

Objective: To establish the need for molecular characterization for personalized medicine and to predict clinical behavior towards new systemic therapies.

Contents:

- **Executive Brief:** (Text + Podcast). Introductory executive summary: "From mutation to phenotype: Why genetics dictates the future of treatment?".
- **Scientific Core**: Full-text articles extracted from Haemophilia on genotype-phenotype correlation and Next-Generation Sequencing (NGS), formatted with the extraction of Key Takeaways.

- **Critical Debate**: Review/opinion articles analyzing current controversies: "Is universal genetic screening ethical and cost-effective in all degrees of severity?".
- **Further readings**: Brief summaries with direct links to PubMed and open-access WFH genetic registries for bibliographic expansion.
- **Practice insights**: Practical "Take-home messages" summary on how to interpret a complex genetic report in daily practice to predict inhibitors.
- **Clinical Cases**: Interactive resolution of a clinical case (e.g., pediatric patient with high-risk mutation) with Q&A. Includes a humanistic touch focused on the management of genetic counseling and communication with the family.
- **Self-Assessment**: Interactive evaluation questionnaire (10 multiple-choice questions with reasoned feedback) to consolidate theoretical concepts.
- **Multimedia**: Complementary audiovisual material that includes explanatory videos of the genetic component of hemophilia and a 3D animation on the coagulation cascade at the molecular level.

Module 2: The New Paradigm: Rebalancing Agents (Anti-TFPI)

Objective: Comprehensive analysis of the clinical evidence, efficacy, and clinical safety of anti-TFPI monoclonal antibodies (marstacimab and concizumab).

- **Executive Brief**: (Text + Podcast). Executive summary: "Inhibition of the tissue factor pathway: A new path to hemostasis without factor replacement".
- **Scientific Core**: Full-text articles on the results of pivotal phase 3 clinical trials (BASIS and explorer), breaking down primary, methodological, and safety endpoints.
- **Critical Debate**: Articles addressing the main current clinical challenge: therapy monitoring through thrombin generation assays and proactive management of pro-thrombotic risk.
- **Further readings**: Summaries with direct links to the most recent WFH/EAHAD consensus guidelines on the management of non-replacement therapies.
- **Practice insights**: Step-by-step clinical decision algorithm: "What patient profile is the ideal candidate to start prophylaxis with an Anti-TFPI?".
- **Clinical Cases**: Interactive clinical case with Q&A focused on the practical approach of therapeutic transition (switching) of a patient from standard intravenous recombinant factor to a subcutaneous monoclonal antibody.
- **Self-Assessment**: Formative evaluation questionnaire (10 multiple-choice questions with reasoned feedback) on dosing, rescue regimens, and safety of rebalancing agents.
- **Multimedia**: Curation of selected videos from recent international symposia/congresses and visualization of an interactive AI-generated MoA (Mechanism of Action) showing TFPI inhibition.

Module 3: The Patient at the Center: The Revolution of Subcutaneous Route and Humanism

Objective: Integrating the technical advantage of the subcutaneous route with the Hippocratic Medicine model, focusing on clinical autonomy and reducing the burden of chronic disease.

- Executive Brief: (Text + Podcast). Executive summary: "From Disease to Illness: How the subcutaneous route redraws the patient's biography and life project".
- Scientific Core: Full-text articles focused on Patient-Reported Outcomes (PROs), adherence metrics, and Quality of Life (QoL) in subcutaneous therapies.
- Critical Debate: Articles on the main current humanistic challenge: "The impact of self-management on the doctor-patient relationship: Does fewer hospital visits mean a loss of the therapeutic alliance?".
- Further readings: Summaries and links to fundamental bibliography on Narrative Medicine, addressing Treatment Burden, and Shared Decision-Making (SDM) models.
- Practice insights: Quick application guide in consultation designed to empower the patient, fostering their autonomy to travel, work, or practice sports free from the "slavery of the vein".
- Clinical Cases: Narrative clinical case with Q&A: Young adult patient with needle phobia, poor venous access, and low adherence. Approach to emotional resolution and socio-occupational impact after switching to the subcutaneous route.
- Self-Assessment: Interactive evaluation questionnaire (10 multiple-choice questions with reasoned feedback) on the application of quality of life scales and empathetic doctor-patient communication tools.
- Multimedia: Complementary high emotional impact audiovisual material (e.g., real testimonies, reports, or short documentaries backed by the WFH about the patient's life outside the hospital environment).

6. Academic and Institutional Direction

Program Editor-in-Chief & Editor Module 2 (Rebalancing Agents):

Dr. Víctor Jiménez Yuste
Head of Hematology Department.
Hematology Service, Hospital Universitario La Paz (Madrid).

Editor Module 1 (Precision Genetics):

Dr. María Teresa Álvarez Román
Head of Hemostasis Section.

Hematology Service, Hospital Universitario La Paz (Madrid).

Editor Module 3 (The Patient at the Center):

Dr. Ramiro Núñez Vázquez
Head of Thrombosis and Hemostasis Section.
Hematology Service, Hospital Universitario Virgen del Rocío (Sevilla).

7. Target Audience

- Graduates/Doctors in Medicine and Surgery.
- Specialists in Hematology and Hemotherapy.
- Medical Residents (MIR) of the specialty.

8. Methodology and Evaluation System

8.1. Teaching Methodology (UX and Navigation)

The course is hosted in an advanced virtual learning environment (LMS), accessible from any device (responsive design). The methodology is asynchronous, allowing the specialist to balance training with their clinical workload.

To guarantee progressive assimilation, the platform requires a sequential navigation flow: the student will not be able to access the final exam without having previously viewed 100% of the contents of the three modules and passed the intermediate formative evaluations (Self-Assessments).

8.2. Comprehensive Evaluation System

The program implements a dual evaluation system to certify the acquisition of competencies, complying with the standards of the Continuing Education Commission:

Continuous Formative Evaluation (Self-Assessments):

- At the end of each module, the student must complete an interactive 10-question multiple-choice questionnaire.
- Each answer (correct or incorrect) provides immediate reasoned feedback, referencing the literature of the Scientific Core, which consolidates learning through trial-and-error.

Final Summative Evaluation:

- Upon concluding the third module, the Online Final Exam will be unlocked.
- It will consist of 30 multiple-choice questions with a single answer (10 questions randomly extracted from the database of each module).
- Passing Criteria: It will be necessary to obtain at least 80% correct answers to pass. The student will have a maximum of 2 attempts to pass this test.

Quality and Satisfaction Survey:

Once the exam is passed, it will be a mandatory requirement to complete an anonymous satisfaction survey assessing the scientific quality, the work of the authors, and the technical platform.

Accreditation and Diplomas:

After meeting all the above requirements, the platform will enable the automatic and secure download (with verification code) of the Certificate of Accreditation, which will explicitly include the logos of the scientific endorsements (SEHH / SETH) and the Continuing Medical Education (CME) Credits granted by the SNS.