

Insights from Haemcon 2025- Proceedings from a Scientific Conference in Pakistan

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Introduction

The 27th Annual Conference of the Pakistan Society of Hematology (PSH), HAEMCON 2025, brought together leading hematologists, researchers, and healthcare professionals to discuss cutting-edge advancements in the field. The conference featured a series of educational workshops designed to enhance clinical expertise and research methodologies. The event also included keynote lectures, oral and poster presentations, and panel discussions, fostering meaningful dialogue on emerging trends in hematology. HAEMCON 2025 successfully reinforced PSH's commitment to excellence in patient care, education, and research. HAEMCON 2025 strategically segmented its themes over three days, progressing from foundational red cell and coagulation challenges to advanced HemOnc therapies and BMT innovations. Integrating keynotes (e.g., gene therapy, myeloma immunotherapy) with focused invited talks (e.g., thalassemia screening, CMV management), the program balanced depth with breadth, fostering dialogue between Pakistani clinicians and global experts. This structure underscored the Society's mission to advance hematology through locally relevant, globally informed strategies. The Conference was hosted in Karachi from April 17 to 20, 2025, with over 350 delegates from Pakistan and various countries attending. The first day was marked by preconference workshops and an inaugural event, followed by a three-day scientific program. The HAEMCON 2025 Scientific Committee dedicated extensive collaborative efforts to meticulously curate the conference program meticulously, ensuring a platform for cutting-edge

hematology advancements and global knowledge exchange. Dr. Saba Jamal (Chair), Dr. Shabneez Hussain (Secretary), and their dedicated team organized the conference with exceptional hospitality. Their meticulous efforts ensured all attendees a seamless and welcoming experience.

Pre-conference workshops

1. *Molecular Hematopathology: Navigating Diagnostic Challenges*: The workshop emphasized integrating molecular diagnostics with traditional methods, discussed real-world case applications, examined challenges in adopting WHO classifications in low- to middle-income countries (LMICs), and addressed the accessibility of advanced techniques in resource-limited settings.
2. *Coagulation Decoded: Case-Based Learning & Hands-On Practice*: This workshop featured interactive case discussions on bleeding and thrombotic disorders, practical Bethesda and factor assay plotting, quality control troubleshooting, and opportunities for expert networking in thrombosis and haemostasis.
3. *Integrated Diagnostic Hematology*: This workshop focused on the multidisciplinary diagnosis of hematologic disorders through flow cytometry, IHC, karyotyping, FISH, and molecular techniques. It emphasized phenotypic-genotypic correlation and the limitations of single-modality diagnostics.
4. *From ABO Discrepancies to Antibody Nuances: A Deep Dive into Immunohematology*: This intensive workshop equipped participants to resolve ABO discrepancies, identify complex antibodies, interpret DAT results, and manage cold and warm

autoantibodies through practical immunohematology challenges.

Navigating Hemoglobin Disorders: A Case-Based & Hands-On Workshop: This interactive session provided practical training in diagnosing hemoglobinopathies through scenario-based stations and hands-on experience with capillary electrophoresis and HPLC techniques. Residents and medical technologists attended the workshops, which were greatly appreciated for their practical, case-based learning approach.

Inaugural session

Haemcon 2025 featured a robust lineup of keynote lectures and expert-led sessions. Highlights included Dr. Maj. Gen. (Retd) Parvez Ahmed's Ibne Sina Lecture on bone marrow transplants in Pakistan, Dr. Flora Peyvandi's keynote on gene therapy for haemophilia, and Prof. Cedric Hermans' insights into haemophilia prophylaxis in LMICs.

The Ibn-e Sina Lecture titled "Bone Marrow Transplant and Cellular Therapies in Pakistan: Current Landscape and the Future" was delivered by Prof. Dr. Parvez Ahmed (Director of Clinical Hematology & BMT, Quaid-e-Azam International Hospital, Islamabad). It highlighted Pakistan's evolving role in hematopoietic stem cell transplantation (HSCT) and cellular therapies.¹ Since 1995, over 4,500 transplants have been performed in Pakistan, with allogeneic transplants dominating (77%).² Despite low health expenditure (1% of GDP) and limited funding, Pakistan offers cost-effective BMT (10- 25k USD vs. 800k USD in the US). The Pakistan Blood & Marrow Transplant (PBMT) Group, established in 2020, unites 13 centers to standardize care³ and maintain a national registry. Advances include mesenchymal stem cell (MSC) trials for spinal injuries and autoimmune diseases, alongside plans for in-house CAR-T cell programs at centers like the Armed Forces Bone Marrow Transplant Centre and the Gambat Institute of Medical Sciences. While infrastructure and international collaborations (e.g., CIBMTR) drive progress, gaps persist in accessibility and public funding. Dr. Ahmed emphasized cellular therapies as the future, urging investment in regenerative medicine and gene therapy to bridge global disparities and enhance patient outcomes in Pakistan.

Gene Therapy in Hemophilia and ISTH Guidance

Dr. Flora Peyvandi's comprehensive lecture at HEMCON 2025 highlighted transformative advancements in gene therapy for haemophilia, emphasizing its potential to redefine treatment paradigms. Clinical trials for AAV-based therapies such as *Valoctocogene roxaparvovec* (for Hemophilia A)⁴ and *Etranacogene dezaparvovec* (for Hemophilia B) demonstrate durable efficacy, with sustained factor activity levels (5–55 IU/dL) and over 90% reductions in annual bleeding rates (ABR) and factor infusion needs over 4–7 years. Notably, *Valoctocogene* achieved EMA/FDA approval despite declining FVIII levels post-treatment, while *Etranacogene* maintained stable FIX activity, enabling 98% of patients to avoid prophylaxis. Emerging therapies like China's *Dalnacogene Ponparvovec* further validate gene therapy's global applicability.

Key challenges include transient hepatotoxicity (up to 86% ALT elevation in Hemophilia A trials), managed with corticosteroids, and pre-existing anti-AAV immunity⁵, which excludes 30–60% of candidates. Long-term safety concerns, such as rare genotoxicity risks, underscore the need for vigilant monitoring according to ISTH guidelines. The ISTH Working Group's Gene Therapy Minimum Data Set (GT-MDS) aims to standardize global surveillance, ensuring robust post-marketing data collection.⁶

Innovative approaches like lentiviral gene therapy (e.g., CD68-ET3-LV) show promise for stable FVIII expression without hepatotoxicity⁷, while CAR-T and "off-the-shelf" NK-cell therapies hint at future directions. Case studies from Milan's hemophilia center illustrate real-world success, with patients discontinuing prophylaxis and maintaining bleed-free outcomes despite variable factor levels.

Dr. Peyvandi concluded that while AAV therapies offer curative potential, their complexity demands rigorous safety protocols, equitable access strategies, and ongoing research into novel vectors. Collaborative efforts, guided by ISTH frameworks, are critical for advancing gene therapy from experimental to mainstream care, especially in resource-limited settings like Pakistan.

Lifetime achievement awards

The Lifetime Achievement Award honours PSH members who have contributed exceptionally to

hematology through teaching, research, leadership, and service over the past 25 years. Nominees are assessed based on their impact on education, professional advancement, and commitment to PSH's mission. This award, presented at the annual meeting, recognizes ongoing excellence and transformative influence in the field. In 2017, seven visionary leaders of PSH received their lifetime achievement awards. In 2025, the key awardees were Prof. Dr Tahir Sultan Shamsi (late) and Maj. Gen. (Ret.) Suhaib Ahmed.

Prof. Dr. Tahir S. Shamsi pioneered stem cell transplantation,⁸ established public-sector BMT centers and authored 224 publications (impact factor: 439) along with 23 book chapters. His accolades include the President of Pakistan's Appreciation Award (2019) and global clinical excellence and mentorship recognition.

Maj. Gen. (Ret.) Suhaib Ahmed is renowned for his contributions to thalassemia. He developed affordable laboratory technologies and led initiatives in prenatal diagnosis⁹. With 70 papers and an H-index of 11, his accolades include the Hilal-e-Imtiaz (2012) and several research productivity awards.

These awardees exemplify excellence in clinical innovation, research impact (e.g., nearly 300 citations for thalassemia screening by Maj Gen Ahmed¹⁰), and community service, such as Prof. Shamsi's transplant registry and Maj Gen Ahmed's thalassemia outreach. Their work has advanced patient outcomes and inspired future generations, aligning with PSH's national mission to elevate hematology standards.

Scientific Program

On Day 1, the scientific discourse opened with Dr. Hamid Saeed Malik (AFIP, Pakistan) providing a critical overview of *red cell disorder challenges in Pakistan*. Dr. Zeeshan Ansar Ahmed (Aga Khan University) delivered a pivotal talk on "*Molecular Screening of Alpha and Beta Thalassemia: When to Do?*", offering evidence-based guidance on optimizing genetic testing in resource-limited settings. This was followed by Dr. Ghulam Nabi Kakepoto (Christie NHS, UK), whose 20-minute session on "*Diagnostic Approaches for Hereditary Membranopathies and Enzymopathies*" highlighted clinical utility and challenges, bridging global standards with regional diagnostic realities. Later, Dr. Saima Farhan (Children's Hospital Lahore), Dr. Flora Peyvandi (Italy), and Dr Munira Borhany (Zia Uddin University) dissected

innovations in *thrombophilia diagnostics* and *rare bleeding disorder management*, respectively. The day concluded with transfusion medicine insights, including Dr. Shabneez Hussain (Indus Hospital) highlighting *blood safety and donor testing strategies*, Prof. Dr. Saleem Ahmed Khan (past President, PSH 2023-2024) addressing regulatory and logistical challenges in establishing plasma derived medicinal products (PDMPs) in Pakistan followed by Ms. Janis Hamilton (American Red Cross) on building *immunohematology labs in Pakistan*.

Day 2 showcased Dr. Waqas Imam Bukhari's (SKMH) analysis of global disparities in adult *ALL therapeutics*. Dr. Aisha Jamal (NIBD) addressed *bone marrow failure syndromes* through case-based strategies for diagnosis and therapy, while Dr. Zehra Fadoo (AKU) analyzed *pediatric AML* care disparities and outcome determinants. Dr. Uzma Zaidi updated on *CML management post-TKI failure*, Dr. Mehreen Ali Khan (AFBMTTC) explored *driver mutations' role in stratifying risk and guiding therapy for JAK-2 positive MPN*, while Dr. Usman Ahmed (SKMH) evaluated *CML diagnostic and monitoring protocols* tailored to Pakistan's clinical landscape in a session on myeloproliferative neoplasm. Day concluded with Dr. Saad Usmani (Memorial Sloan Kettering Cancer Center, USA) exploring *myeloma immunotherapy*. At the same time, Dr. Arsalan Ahmed (Zia Uddin University) and Dr. Bushra Ahsan (Shaukat Khanum Memorial Hospital) addressed *lymphoma diagnostics* and *Hodgkin's lymphoma treatments*, while Dr. Khurram Bilal Tariq, founder member of HOPPE (Hematology Oncology Physician of Pakistan Ethnicity), gave a virtual talk on *updates in CLL*.

On Day 3, During bone marrow transplant session, Dr. Natasha Ali discussed *CMV management in transplants*, Dr. Raheel Iftikhar (AFBMTTC) outlined *advancements in plasma cell disorder transplants in Pakistan*, focusing on tailored protocols; Dr. Shahbaz Memon ((National Guard Hospital, Saudi Arabia) compared *haplo-SCT's accessibility with gene therapy's curative potential for pediatric thalassemia*, addressing cost and infrastructure challenges. The last day featured two plenary talks: Dr. Muhammad Abdul Naeem (CMH, Lahore Medical College) on recent changes in *myeloid neoplasm classification* by the World Health Organization. At the same time, Dr. Afsar Ali Mian

(AKU) examined *gene editing for hemoglobinopathies* from local perspectives.

Session on Advancing Hematology in Pakistan Through Research & Innovation:

This visionary session, curated by Dr. Javeria Aijaz (Indus Hospital and Health Network), spotlighted cutting-edge initiatives shaping Pakistan's hematology landscape. Dr. Muhammad Asif Naveed (UHS, Lahore) introduced *AI-driven digital microscopy* to revolutionize diagnostics. Dr. Rafia Mahmood (AFIP) detailed efforts to establish *local NGS pipelines for myeloid neoplasms*, unlocking precision medicine potential. Dr. Najia Tabassum (Ziauddin) explored *proteomic biomarkers in pediatric ALL* to refine risk stratification, and Dr. Sindhu Rehman (KEMU) advocated for *social media-integrated education* to bridge training gaps. These talks collectively highlighted Pakistan's increasing ability to integrate innovation with resourcefulness, addressing clinical and educational challenges. This session exemplified a strategic push toward locally relevant, globally informed solutions, positioning Pakistan's hematology community at the forefront of technological adoption and collaborative research.

Quiz

A 40-question MCQ quiz, administered via Google Survey, engaged undergraduate MBBS students to assess their knowledge of hematology and foster interest in the specialty. To recognize excellence, prizes were awarded to the top three performers.

Abstract presentation

Seventy-eight abstracts were received nationwide; 20 were accepted for oral presentation, and the remainder for e-poster presentation. The free paper sessions engage young residents from various institutes to present their work and provide networking opportunities.

Awards

Many esteemed haematologists participated as reviewers for the oral and poster abstracts. Two to three individuals reviewed each abstract, and awards were given to the top three oral and poster presenters. Prizes were also given to undergraduate students who took a written assessment for their knowledge of hematology.

Conclusions

Spanning red cell disorders, coagulation, leukemia, and transplantation, HEMCON 2025 united Pakistani and international experts to advance hematology through collaborative innovation and evidence-based solutions. Both global and local experts emphasized advancements in precision medicine, transplantation, and emerging technologies, solidifying HAEMCON 2025 as a platform for cutting-edge hematology discourse.

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