

## Modernizing hematology practicals: advancing medical education in Indian medical colleges

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In the realm of medical education, it is imperative to stay abreast of advancements in medicine. However, many physiologists in Indian medical colleges continue to employ outdated methods in the teaching of hematology practicals.<sup>[1]</sup> These practical sessions focus on the identification of blood cells under a microscope, recognizing normal morphology, and detecting abnormal cells for diagnosing blood disorders. Additionally, students learn about Complete Blood Count (CBC), which involves measuring parameters like hemoglobin, red blood cell count, white blood cell count, and platelet count using manual methods. Proper blood smear preparation is emphasized for accurate evaluation of cell morphology, detection of parasites, and identification of abnormal cells. Coagulation studies are also covered, providing knowledge about different tests such as PT, a PTT, and INR for understanding common coagulation disorders and their diagnostic procedures.<sup>[2-4]</sup>

However, the traditional approach to hematology practicals presents limitations in terms of accuracy, efficiency, and student engagement. Manual techniques for blood cell counting and self-pricking for blood samples are outdated and fail to align with current practices.<sup>[5]</sup> Thus, integrating modern technology, particularly automated hematology analyzers, is necessary to enhance the learning experience and prepare students for their professional careers.

### Integration and Benefits of Modern Technology:

Transitioning towards modern techniques and technologies is essential to overcome these challenges. Automated hematology analyzers can significantly enhance the teaching of hematology practicals. These advanced instruments provide rapid and accurate results, freeing up students' time for result interpretation and analysis instead of time-consuming manual procedures. By exposing students to cutting-edge technologies, they gain proficiency and remain up-to-date with contemporary practices in clinical hematology.

Automated hematology analyzers offer improved accuracy and efficiency, providing precise and reliable results while minimizing human error and reducing analysis time. Real-time result generation enables students to observe and

interpret blood samples immediately, fostering analytical skills and creating a dynamic learning environment. Furthermore, exposure to modern diagnostic machines prepares students for future advancements they will encounter in their careers. Automation also optimizes resources, making hematology practicals more cost-effective in the long run.

### Recommendations for Change

To modernize hematology education, collaboration with educators and medical professionals is crucial. The curriculum should be revised to incorporate modern techniques, technologies, and case-based learning to align with current clinical practices. Allocation of resources for state-of-the-art hematology analyzers and equipment is necessary to provide students access to the latest technology. Faculty members should undergo training programs to familiarize themselves with modern hematology techniques and teaching methodologies. Partnerships with diagnostic laboratories can expose students to advanced techniques and real-world hematology practices. Additionally, mechanisms for continuous improvement through feedback and evaluation should be established.

Revolutionizing hematology practicals in Indian medical colleges through the integration of modern techniques and technologies is essential. Embracing automated instruments, updating the curriculum, and fostering collaboration with diagnostic laboratories will equip students with the necessary skills for successful careers in clinical hematology. This change will enhance the learning experience, improve patient care, and ensure that Indian medical education keeps pace with global advancements in the field.

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