

The Present and Future of Molecular Clinical Biochemistry in Laboratory Medicine

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ABSTRACT

Clinical biochemistry is a branch of laboratory medicine concerned with the detection of chemicals (both natural and synthetic) in blood, urine, and other bodily fluids. These test results are helpful in identifying health issues, assessing prognosis, and directing a patient's therapy. Clinical biochemistry deals with the methodology and analysis of biochemical experiments conducted on body fluids and tissues to aid in disease detection, treatment, and monitoring.

Keywords: Periodontal disease; Medical measurements; Biomarkers; Diagnosis; Monitoring

INTRODUCTION

Clinical biochemistry is a branch of laboratory medicine concerned with the detection of chemicals (both natural and synthetic) in blood, urine, and other bodily fluids. These test results are helpful in identifying health issues, assessing prognosis, and directing a patient's therapy. Clinical biochemists ensure that patients receive reliable, high-quality, accurate, and precise biochemical test results so that they can receive high-quality treatment. Clinical biochemists are in charge of designing and implementing laboratory quality control programs that cover all facets of the research process, including pre-analytical, analytical, and post-analytical testing. Clinical biochemistry, also known as clinical chemistry, pathological biochemistry, or chemical pathology, is an important applied subdiscipline of medical biochemistry. Clinical biochemistry deals with the methodology and analysis of biochemical experiments conducted on body fluids and tissues to aid in disease detection, treatment, and monitoring [1,2].

Clinical biochemistry's changing spectrum

The discovery of biomarkers and the availability of effective measurement methods drive clinical biochemistry. As a result, its scope is continually shifting. In the 1940s, it became a separate discipline. The Clinical Chemistry, by C.H. Ralfe of the London Hospital, was the first textbook with the term "clinical chemistry" in its title, and it was published in 1883. Clinical biochemistry is divided into two categories: methodological and interpretative. The majority of contemporary textbooks emphasize interpretative aspects and clinical parallels, reflecting the strong professional relationship between clinical chemists and practicing clinicians, while early textbooks were heavily focused on technique.

Clinical biochemistry had amassed a significant body of interpretive expertise by the late 1970s, as shown by the quality of clinical biochemistry textbooks published at the time. The principle of biological heterogeneity (which is one of clinical biochemistry's most significant contributions to medicine) was becoming more widely understood [3].

Laboratory automation and process control, as well as computational problems, are all correlated with high-volume research in clinical biochemistry. Under the banner of evidence-based clinical biochemistry, clinical biochemists began to analyse emerging evidence for the benefit of diagnostic testing in accordance with the extension of evidence-based medicine. Molecular diagnostics (particularly for the diagnosis of hematological neoplasms) and pharmacogenetics are also growing rapidly. In the last few years, significant progress has been made in genetic screening. Clinical biochemistry had amassed a significant body of interpretive expertise by the late 1970s, as shown by the quality of clinical biochemistry textbooks published at the time [4].

Laboratory automation and process control, as well as computational problems, are all correlated with high-volume research in clinical biochemistry. Under the banner of evidence-based clinical biochemistry, clinical biochemists began to analyze emerging evidence for the benefit of diagnostic testing in accordance with the extension of evidence-based medicine [5].

CONCLUSION

The majority of laboratory medicine forecasts are upbeat, focusing

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on the production of more successful drugs, disease eradication, and longer lives. For the years 2032-2062, telemedicine is expected to play a significant role. It's important to note, though, that forecasting isn't an exact science, and several past predictions have failed to materialize. An analysis of the future, on the other hand, aids in the planning process by allowing management teams to build expertise and gain tools that could help them turn these forecasts into action.

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