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Chemical Pathology

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Editorial

Clinical chemistry (also referred to as chemical pathology, clinical biochemistry or medical biochemistry) is that the area of chemistry that's generally concerned with analysis of bodily fluids for diagnostic and therapeutic purposes. it's an applied sort of biochemistry not to be confused with medicinal chemistry, which involves basic research for drug development.

The discipline originated within the late 19th century with the utilization of straightforward reaction tests for various components of blood and urine. within the many decades since, other techniques are applied as science and technology have advanced, including the utilization and measurement of enzyme activities, spectrophotometry, electrophoresis, and immunoassay. There are now many blood tests and clinical urine tests with extensive diagnostic capabilities.

Most current laboratories are now highly automated to accommodate the high workload typical of a hospital laboratory. Tests performed are closely monitored and quality controlled.

All biochemical tests come under chemical pathology. These are performed on any quite liquid body substance, but totally on serum or plasma. Serum is that the yellow watery a part of blood that's left after blood has been allowed to clot and every one blood cells are removed. This is often most easily done by centrifugation, which packs the denser blood cells and platelets to rock bottom of the centrifuge tube, leaving the liquid serum fraction resting above the blood cell. This first step before analysis has recently been included in instruments that operate the "integrated system" principle. Plasma is in essence an equivalent as serum, but is obtained by centrifuging the blood without clotting. Plasma is obtained by centrifugation before clotting occurs. The sort of test required dictates what sort of sample is employed.

This large array of tests are often categorised into sub-specialities of:

- General or routine chemistry – commonly ordered blood chemistries (e.g., liver and kidney function tests).
- Special chemistry - elaborate techniques like electrophoresis, and manual testing methods.
- Clinical endocrinology – the study of hormones, and diagnosis of endocrine disorders.
- Therapeutic Drug Monitoring – measurement of therapeutic medication levels to optimize dosage.
- Urinalysis – qualitative analysis of urine for a good array of along side other fluids like CSF and effusions.
- Fecal analysis - mostly for detection of gastrointestinal disorders.strokes, paralysis agitans, ALS, head or neck injuries, surgical accident, or spastic paralysis.

Chemical Pathology is that the branch of pathology which deals with the diagnosis and management of disease by use of chemicals present within the body fluids and tissues. Typically, chemical pathology laboratories are the most important subunits in pathology departments and commonly perform measurements of the many different chemicals on many patient samples every day. Because many of those analyses are time-critical, the chemical pathology laboratory is typically highly automated and uses complex analysers that perform many analyses during a short time.

Chemical pathologists are liable for running these laboratories, ensuring the standard of the results, and providing a diagnostic service and advice to clinicians. this needs a radical knowledge of the pathophysiology of disease, the diagnostic value of individual tests, and therefore the work of the laboratory. due to the complexity of the laboratory, trainees in Chemical Pathology spend tons of your time resulting in the Part I assessment learning about the laboratory and about the instrumentation and procedures within the laboratory.

The chemical pathologist needs:

- Strong aptitude for, and interest in, the scientific basis of drugs and laboratory work.
- The power to steer , to figure autonomously and to figure well as a part of a team of medical, nursing and laboratory staff, also because the wider discipline of Pathology.
- The power to form sound clinical judgments and to mix their laboratory and clinical roles seamlessly.
- Familiarity with information systems and data analysis.
- The power to speak well orally and in writing; The power and willingness to guide and teach trainees.

By the time trainees complete the wants for Fellowship, they should:

- Have a radical understanding of pathophysiology and be ready to liaise with clinicians;
- Understand laboratory organisation and processes and be ready to manage a budget;
- Understand the way to manage staff and communicate effectively about issues which will arise;
- Stay awake so far with new assays and new ideas arising in chemicalpathology.

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