

# Teaching and Training in Chemical Pathology/ Clinical Chemistry

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Teaching and training in Chemical Pathology or Clinical Chemistry as known in USA deserves our review. The chemical pathology produces the largest volume of tests in the Pathology Department; the number runs in millions in any large Hospital. This service of the pathology helps almost all branches of Medical Sciences. The Consultants heavily depend on the laboratory results to confirm or exclude the disease entities as well as to monitor the progress of the disease. In order to have the results reliable and dependable the total quality management must be in place under active supervision of appropriately trained pathologist. Furthermore appropriate interpretation followed by relevant comments of the pathologists on the reports where necessary may help and guide direct management of the patients.

On teaching side, the Clinical Pathologist must discuss all abnormal results with the postgraduate students preferably in problem solving approach. He/she should impart the theory and practice of quality control, various administrative procedures, and skills and instil enthusiasm for research. Procedure manuals must be prepared and constantly updated. Active liaison with other clinicians is a must.

Unfortunately the situation is alarming in many countries. A fully automated instrument along with trained technician is thought sufficient to run a clinical chemistry Laboratory. The chemical pathologist relaxes in his/her office all day leaving the Laboratory at the mercy of the technicians. This seriously erodes the functioning of the laboratory in its all aspects. The technician manipulates the results making unauthorized changes in the machines without any knowledge. Control material running has also become a fashion of new era. Almost all Laboratories claim to run control material but do not possess any organized monitoring system. They seem to be unaware that purpose of quality control is above and beyond the advertisement of their certification of some regulatory bodies. Neither a chemical pathologist nor a clinician is ready to understand its value. Meanwhile teaching of post graduate medical residents also seeks our attention. In

academic hospitals of advanced countries, Laboratory Medicine University departments rely heavily on hospital based Laboratory to carry out the bulk of the teaching at the undergraduate (medicine and other related sciences), graduate (MSc and PhD) and professional program levels. Contrarily we neither possess any curriculum and nor the set pattern of evaluation of postgraduate residents according to our academic and demographic requirements. It has become a tradition to copy curriculum of foreign universities and send to the university authorities. University authorities usually are non professional and unable to judge the curriculum on standards, relevance and requirement. Moreover; continuous medical education exists nowhere in our institutions. Supervisors do not take responsibility of their residents. Majority of residents are also interested in only to get the tag of post graduation having a wish of bright future with an earning job. They are least bothered what they are learning out of it. They keep wasting their time and become habitual time and energy wasters. Keeping the performance (of both supervisor and trainee) in mind; supervisors give undue favor to the residents for passing exams. This vicious circle is going on with poor quality production of the postgraduates. We must be afraid of the time when Chemical pathology will no longer be described as a specialty and chemical pathologists will spend all their time somewhere in the dark recesses of a hospital.

We are living in exciting times and Clinical Chemists must learn to adapt very quickly to the continuing changes in our discipline. The new developments in science and technology suggest that we are yet to realize the best times of this exciting profession. In recent years the role of clinical biochemists has developed, with increasing numbers taking on more clinical responsibilities. The clinical role includes outpatient clinics; usually workrelated to endocrinology, diabetes, lipids, cardiac risk assessment, and disorders of calcium metabolism, working in nutritional support teams, and performing dynamic function testing. A clinically based clinical biochemist might see the same

patient in clinic and manage the patient by themselves (Stephen 2004). The job can also include pediatric clinical work and the management of rare conditions such as the porphyrias and inborn errors of metabolism. This is in addition to the normal advisory work of clinical biochemists. The clinical work has undoubtedly become more important with advancement in molecular diagnostics. (Stephen; 2004) This also entails a liaison with other colleagues to ensure that appropriate investigations are pursued and interpreted accordingly.

One important job of clinical biochemist is to address the management and quality control issues of Laboratory. Internal quality control at the chemical analytical Laboratory, involves a continuous, critical evaluation of the Laboratory's own analytical methods and working routines. The control encompasses the analytical process starting with the sample entering the Laboratory and ending with the analytical report.

Blood serum levels of various analytes offer enormous potential for research. With enhanced Laboratory training chemical pathologists bear an ideal position to observe and relate the underlying pathology with disease. Using new techniques of molecular diagnostics, clinical biochemists could help the community to know the root cause of newly emerging diseases. The research activities of Laboratory scientists include method development and evaluation, Laboratory support to clinical research in which the Laboratory scientist will be a co-investigator, as well as individually funded research which involves graduate students, doctoral Fellows and projects related to mechanisms of disease, translational, as well as basic research (Eleftherios&Diamandis., 1999).

Continuous medical education is no doubt important at all levels, in all aspects. Informal teaching (for general practitioners, junior medical staff, medical students, and non-medical staff) is an obligation. Specialized training of Laboratory professionals, including clinical chemists, clinical microbiologists, and anat-

omic pathologists is an important part of it; and curriculum should be designed by joint efforts of highly skilled professionals keeping in view the requirements of new era and ground reality. The residents should be kept busy in fruitful activities like clinical case presentation, journal club etc. The trainees should be held responsible to advice on what further investigations and treatment a patient might require as a result of the preliminary biochemical investigations requested by the patient's doctor. Quality assurance of Laboratory should be maintained by medical graduates. Furthermore, academic Laboratory scientists should also participate in the organization and coordination of new courses and teaching of Laboratory staff. It should be remembered that the unique identity of a "Clinical Chemist" as a Laboratory scientist is defined by the service component of the profession [Pearson MJ., 1999].

We must conclude; if we were to be effective pathologists, we must constantly improve our knowledge, recognize the development in science and technology and be ready to understand and even endorse new changes. As our profession is evolving incessantly due to technology advancement, we should espouse a very supple approach towards change. It will guarantee that we will not be surpassed by our times; if we do, we may become redundant!

## References

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