

Frequently asked Questions on the Discipline of Laboratory Medicine

Q.1. How the Discipline of Laboratory Medicine was created at AIIMS?

Ans. At AIIMS, Laboratory Medicine took up the space *left out* by the parent departments of Pathology, Biochemistry and Microbiology.

Dept. of Pathology had shed the responsibility of body fluids and excretions, like urine, stool, sputum, peritoneal and plural fluids, CSF and semen.

Dept. of Microbiology had gone into the depth of biology of microbes particularly molecular biology and not taken up the serology, rapid diagnostic test as its service component.

Dept. of Biochemistry had not taken up the responsibility of clinical service and had gone into depth of molecular biochemistry.

Dept. of Hematology looks after the cases which are primary hematological disorders and does not take responsibility of 'routine' hematological investigations of the whole hospital or emergency bleeding disorders.

At AIIMS, the discipline originated as a viable alternative to the gaps which no department singly or jointly wanted to address.

In such a scenario, one Director of AIIMS, having track record of establishing the Country's finest Ophthalmic Center, took exemplary initiative (1980) to organize this laboratory disciplines in one central place. This was made into a Department by the continued effort of the Director Prof. Sneha Bhargava at AIIMS in November, 1988.

Q.2 Does such discipline exist in abroad?

Ans. In UK the generic diagnostic department is Pathology. Anatomic Pathology looks after tissue or cell pathology. Clinical pathology encompasses body fluid pathology, chemical pathology (chemistry), microbial Pathology (diagnostic microbiology), Hematology etc.

In USA, the nomenclature is used as Pathology *and* Laboratory Medicine. In essence, this branch of Diagnostic Laboratory Science encompasses clinical pathology, microbiology, clinical biochemistry and hematology.

Q.3 What is in the name, Pathology or Laboratory Medicine?

Pathology means the Science of disease. Laboratory Medicine is Medicine at the laboratory level. Emphasis of the term Laboratory Medicine is more on applied, service, and translational aspect. Emphasis in the term Pathology is more on the conceptual aspects of science.

Q.4 Is there any difference in nomenclature between Clinical Pathology and Laboratory Medicine?

The term Laboratory Medicine is more dynamic. It encompasses participation in Test Selection, Test Operation and Test Interpretation. A laboratory physician is more actively involved in patient's management, participates in rounds with clinicians. He

is the Consultant of clinical consultants, Doctor of doctors, Medical Detective. His rooting is in Instrumentations and the terminus is in Medical audit (pre-test and post-test counseling). He is consultant of all clinical disciplines of Medical Science.

Q.5 Is Laboratory Medicine *merely* a service department?

Ans. At AIIMS, initially, it was! It was catering to the patients of the main hospital (*Service to Patients*). Now it is merely not so! It has started its Ph.D. program since 1996 and MD program in 1997. First batch of MD students came out in 2000. Since then the Dept has been offering *Service to Students*, helping in human resource development and capacity building of the Nation. In the process, the Dept has been producing incredible data for the practice of Evidence-based Medicine and research publications. This is *Service to Science*.

Even as service department, this is the largest laboratory of AIIMS. The closure of this department even for a single day will bring the patient's service in all clinical disciplines nearly to halt. It accommodates a large centralized phlebotomy service and runs a 24x7 emergency service pertaining to four areas.

In the context of Academics, the Academic Profile of the Dept. of Laboratory Medicine is comparable to any other Academic Dept. of AIIMS in terms of teaching, research and publications.

Q.6 Is MD in Laboratory Medicine degree sub-servient or 'less' to MD Pathology, Microbiology and Biochemistry degree?

Ans. No. It is an independent discipline of its own with its own specifications like any other subject.

About 30-40 years back in India there had been a course, 'Diploma in Clinical Pathology', the course encompassing so-called fluid-excretion pathology, chemical pathology and a portion of primitive microbiology like gram-staining, culture and biochemical tests. This diploma was much sought after qualification, even was preferable to a postgraduate degree-holder in Pathology. However, most of the students could not succeed to get the diploma because of the spectrum of knowledge it used to encompass even during the period.

At present, this relatively 'small' field of the yesteryear is widely enlarged which cannot remain confined merely as a syllabus for a 'Diploma'. For five reasons like, a large number of research investigations finding place in diagnostic laboratory, advanced instrumentations which has broken the barrier of the disciplines, introduction of medical audit, (pre and post test counseling), development of specific methods of quality assurance for automated and manual investigations, and inclusion of laboratory management, safety, ethics and legal aspects of laboratory science, resulting in information load and broadening of knowledge base, one requires magnifying the course as a postgraduate degree in laboratory science.

We thought that this could be recognized as basic postgraduate discipline in Laboratory Sciences. However, it may run concurrently with MD in Pathology, MD in Microbiology, MD in Biochemistry degree. These three basic subjects have incredible roles in concept building in their respective field at the level of undergraduate, postgraduate and super specialty level.

Q.7 Can a Faculty of Laboratory Medicine with MD degree in Laboratory Medicine offer a Ph.D. course and thesis thereof?

Ans. A faculty can undertake Ph.D. program only after 5 years of service in the Dept. as faculty. By that time, she/he is experienced enough to understand the issues and problems in the various niches of the discipline and gain ability to join as a chief guide in Ph.D. program.

The ability to undertake a Ph.D. student and guide him is not the sole criteria of a new emerging discipline for its recognition. Further, the ability to undertake a Ph.D. student and to guide him depends on the depth of understanding and knowledge of the individual on the subject with the ability to ask research question and research hypothesis, and his knowledge on research methodology.

Q.8 Is Laboratory Medicine equipped to run any super specialty course?

Yes. There are two areas in medical discipline, which are taught in Pathology, Biochemistry and Microbiology in their respective context. These areas are Molecular Biology and Immunology. The laboratory Medicine is the field of application of the knowledge in these two fields overarching Pathology, Microbiology and Biochemistry. For this reason, Laboratory Medicine is the best equipped to run super specialty DM course in Molecular Medicine and Immune Medicine (in collaboration with the Depts. of Medicine, Pediatrics and Transplant surgery)

Q.9 Dept. of Laboratory Medicine has been created by taking service leave of four parent disciplines! Does it then have 'inherent' 'divisions' within it?

Ans. To start with, it is yes; in the long run, no. At the surface it is yes; in depth, no. As the faculty matures in this discipline, he might find only one or the other area, say hematology, microbiology or chemistry, most interesting. But *never does he miss the links* between four since during his post graduation he has been trained in all.

To have "Divisions" in Laboratory Medicine is a result of retrogressive thinking. Since full-fledged discipline exists in name of Biochemistry, Microbiology etc. The progressive thinking on the future of Laboratory Medicine is to specialize in Pediatric Lab Med., Geriatric Lab Med., Occupational Lab Med., Psycho-neuro-immuno Lab Med. etc.

Q.10 The laboratory Medicine discipline has been first established in India at AIIMS, Delhi in 1988. Why do you find this 'time' so crucial to take up this issue?

Ans. Most of the big corporate laboratories have opened up dept of Laboratory Medicine. However there are little academics in such hospitals. Tata memorial Hospital at Bombay, Safdarjang Hospital at Delhi, and School of Tropical Medicine, Calcutta, Delhi State Cancer Hospital, Institute of Liver and Biliary Sciences, Delhi have opened up Laboratory Medicine department but none of those places yet offer any degree on this discipline. AIIMS is the only institute which has opened up the human resource of such laboratory physicians.

When Government of India has taken initiative to cater diagnostic service free of cost even to the district level, this course offers laboratory physicians, the human resource for perfecting this service. Outsourced or in-sourced, one need expertise and

experience in quality delivery of service to patients, service to students and service to science.

When six AIIMS-like Institutes are coming up covering all over India, this is the golden time to make Government of India aware of AIIMS's achievement in this direction and make its expertise available to serve these Institutes.

Medical Council of India has already initiated the process for starting postgraduate courses in Laboratory Medicine in all MCI-recognized post graduate Medical colleges.

Q.11 What is your Three-Tier-Concept of an Ideal laboratory in a Medical College Hospital or Institute?

The laboratories make a nested hierarchy in a Medical College hospital / Institute. In Nest I, is the Central Hospital lab, which caters 24 hours x 7, TOT 2-8 hours, run by Poly-disciplinary MDs, Laboratory Physician, and offers MD Lab Med, Bsc, MLT, Quality Management training etc. Tier II is the respective department of Pathology, Biochemistry Microbiology, Transfusion Medicine etc, which caters for day time service, TOT 48-72 hours, run by Mono-disciplinary MDs with academic course like MD degree in respective subject and DM degree in certain super-specialty. Tier III is constituted by Common Research Facility laboratory with all high-end equipments and equipments bought out of Funds from funding agency. Tier III Lab is open round the clock and the TOT varies. Research Faculty and Scientists with PhD degrees might run it.

Q.12 How does any Medical College or Institute open up Discipline of Laboratory Medicine?

Ans. It should be done stepwise.

The first step is to open up a Central laboratory for the hospital with a common collection center. The Laboratory should work round the clock with more than thousands of patient's samples like blood and other body fluids done by automated biochemistry analyser, chemiluminescence analyzer, automated hematology counters, ESR analyzer, coagulation analyzer, urine analyzer, Elisa, simple microscopy, culture, Leishman Giemsa, Gram staining, India Ink preparation, rapid tests like antigen detection in fluids and rapid molecular techniques, diagnostic flowcytometry etc.

Second step is to make it a Department. It opens up a new option and job-opportunity for Pathologist, Microbiologist, and Biochemist to join the Department of Laboratory Medicine as a faculty.

No department can grow to contribute effectively without an Academic course. In step three, start a residency program leading to MD degree in Laboratory Medicine. This opens up a **new option for medical students to do a poly-disciplinary MD course**.

Medical Council of India has been working in this line.