

Introduction



Medical laboratory science is an umbrella field comprising a number of different disciplines. The major disciplines/departments of medical laboratory science are:

1. Clinical Chemistry
2. Haematology
3. Histopathology
4. Medical Microbiology

The major role of a medical laboratory is to assist in the diagnosis and treatment of diseases by performing qualitative, quantitative or screening test procedures or examinations on materials derived from the human body. The laboratory plays a vital role in the overall comprehensive health care system by

1. confirming provisional diagnosis of the clinician
2. ruling out a diagnosis
3. detecting disease
4. regulating therapy

In recent times, the increased demands on the laboratory has led to the introduction of more specialised and sophisticated procedures including automation and computerisation. As a result, the medical laboratory scientist of today is a far cry from the “lab boy” or “technician” of yesteryears. The medical laboratory science practitioner of today must, of necessity, be theoretically sound and practically effective in his chosen discipline.

◆ REGULATING BODY

A regulating body for the profession is usually established by the government of the land. This body sets standards by monitoring and by evaluation of quality and appropriateness of services to patients and the resolution of any identified problems. It is also charged with the responsibility of prescribing and conducting all the professional examinations, issuing licenses to members and permitting the establishment of private medical laboratories.

◆ QUALIFICATIONS

The qualifications for entry into professional studies in the field of medical laboratory science is determined by the appropriate government agency of the state. In most cases, it is a four year course which includes theoretical and practical training in institutions of higher learning at the end of which a professional degree or diploma is awarded. Also, graduates with first class degree in biomedical sciences are admitted into the profession after on the bench training for some period of time.

A higher diploma or degree may be awarded after further training in one of the disciplines. It is a common practice these days for medical laboratory scientists to carry out research and acquire higher academic degrees.

◆ **SURVEILLANCE OF CLINICAL LABORATORIES**

The tasks performed in a medical laboratory assist in the diagnosis and treatment of diseases. If not performed properly, they can adversely affect the health and well-being of the patient. It is, therefore, necessary that

- (a) all medical laboratory scientists who work in the laboratory should have attained a minimum level of formal education in that field;
- (b) a machinery should be created by the State to ensure that only qualified personnel are able to work in a medical laboratory;
- (c) the laboratory is run on scientific lines and has the minimum required infrastructure and equipment necessary for the discharge of its tasks; and
- (d) members of the society living or working near the laboratory do not suffer any nuisance caused from the work of the laboratory.

There is a need to lay down minimum qualifications and training for technical personnel who carry out the procedures in the laboratory. Ideally, as is done in most countries, a professional body should be set up and statutorily empowered to ensure that only those medical laboratory scientists who are professionally licensed by it can carry out technical procedures in the laboratory. Such a licence should be a periodic one requiring renewal from time to time. This body should also be entrusted with

- (a) grading of Medical Laboratory Scientists related to their educational qualifications and/or experience;
- (b) supervision over the observance of professional ethics by its licensed members; and
- (c) continual professional training and upgradation of skills of the laboratory scientists.

A statute should also be created to empower a State body to issue licenses to set up and run a laboratory after meeting the prescribed minimum standards of equipment, infrastructure and public safety.

◆ **PROFESSIONAL ETHICS**

Newcomers as well as established members of the profession must at all times be aware of the need for dedication and extra care in the discharge of their duty. Practitioners are therefore required to observe and adhere strictly to a “Code of Professional Conduct” which is designed to sustain motivation and serve as a reminder that the medical laboratory science profession is first and foremost dedicated to the service of the sick and to the promotion of good health care.

Each member of the profession should at all times observe the following principles:

1. Exercise his professional judgement, skill and care to the best of his ability.
2. Place the well-being and service of the sick above his own interest.
3. Fulfil his professional role with integrity and honesty.
4. Refrain from misusing his professional position to the detriment of patients, employers or professional colleagues.
5. Be loyal to the medical laboratory science profession by maintaining high standards and always striving to improve his professional knowledge and skills.
6. Treat with discretion all confidential and other personal information gained in the practice of his profession.
7. Avoid the disclosure of results of his investigations to unauthorised persons.
8. Respect and work in harmony with other members of the medical/health team.
9. Be at all times courteous, patient and considerate to the sick and their relatives.

10. Follow safety procedures as laid down by the authority.
11. Fulfill reliably and completely the terms and conditions of his employment contract.
12. Promote the study and development of the medical laboratory sciences and training and education of medical laboratory scientists.

At the end of the day, there should always be joy and satisfaction in the knowledge that duties undertaken each working day constitute an invaluable service to humanity.

◆ THE LABORATORY

The design, size and organisation of a medical laboratory depends on the nature of work to be carried out, and the availability of funds and space. Basically, the laboratory, no matter the size, must have enough room for full movement of the people working in it. An overcrowded and cramped laboratory easily leads to accidents, damaging of instruments and endangering of life.

The floor of the laboratory must be well constructed, washable, non-slip, impermeable to liquids and resistant to the chemicals used in the laboratory. Floor drains are recommended. The walls must be smooth, washable and free from cracks. At each end of the laboratory, there must be swing doors so that the laboratory staff may not be trapped during fire or other emergencies. A modern laboratory should be effectively air-conditioned. This eliminates strong currents of wind

which may cause problems of air-borne infections, aerial contaminations and menace of pests and insects, and which may also constantly deflect the flame of a bunsen burner.

The laboratory should be sectioned into separate rooms or working areas with designated places and rooms for patients, reception of specimens, visitors and staff rest room. The working benches should be smooth-surfaced, impervious, washable and resistant to disinfectants and chemicals used in the laboratory. The work benches should be about 60–65 cm. high and 50–60 cm. wide. To give good working space and facilitate effective cleaning the bench tops should not be cluttered. Cupboards and shelves can be constructed to fit in under and above the benches respectively.

A well air-conditioned and fire-proof store for reagents and chemicals must be a part of the laboratory. Hand-wash basins are to be located at strategic corners of the laboratory, and paper towels and soaps should always be available near them. The laboratory should have adequate lighting arrangement. A steady supply of electric power and running tap water are essential for the laboratory to function effectively. An adequate and safe waste disposal system for the laboratory is also important. In addition, fire extinguishers must be conspicuously located in the laboratory and fume cupboards/safety cabinets must be provided.

It is now the practice to use modular designs for the laboratory layout. This is because the concept of modular designs offers much more flexibility in overall layout of a busy laboratory.