

Position Description of a Clinical Biochemist
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Preamble

Clinical Biochemistry laboratories have changed considerably in recent times. These changes have included the creation of multi-discipline core laboratories. At the same time new technologies, including molecular biology and genetics, have taken an important role, especially in academic institutions.

These two trends have led to most clinical biochemists needing to broaden their knowledge beyond traditional clinical chemistry, on the one hand; and, on the other hand, some are expected to develop expertise in highly focused areas of the discipline.

To add to the complexity of a position description, there are overlapping scopes of practice with related professionals including medical biochemists, general pathologists and laboratory managers. There are significant differences between academic health science centres, community hospitals, commercial and not-for-profit community laboratories.

There are institutional differences regarding the administrative or management role of a clinical biochemist. Some institutions have virtually no role for Clinical Biochemists in this regard; others have a full line function role for this position.

There are significant differences among the provinces in Canada in terms of legislation, terminology and practice. In some provinces it is a legislated requirement to belong to certain professional organizations in order to practice Clinical Biochemistry; in others this is not the case.

This document relates mainly to scientists with a doctoral degree who are working in a clinical laboratory environment. It is recognized that there are non-doctoral scientists working in the same environment to whom some or all aspects of this document may apply. The document does not include medical personnel, who have their own associations and position descriptions.

Position summary

The Clinical Biochemist acts as an interface/consultant between the laboratory and clinicians. (S)he sets the standards for the provision of high quality clinical laboratory services to meet clinical needs. This includes a wide array of functions including clinical consultation, test selection, test utilization, instrumentation, interpretive reporting, patient and specimen preparation etc. (S)he participates in appropriate professional and academic activities depending on the position setting.

Education and background

- PhD in a related discipline (e.g. biochemistry, chemistry, biology, immunology etc).
- A minimum of two years of formal training in Clinical Biochemistry in an accredited training program.
- Eligibility for certification from the Canadian Academy of Clinical Biochemistry.
- Post-doctoral research experience is usually an asset, but not a requirement.
- The above are not necessarily required by law to function as a Clinical Biochemist, depending on Provincial legislation and local practice; however, they are generally required by position advertisements.

Professional development

- It is expected that a Clinical Biochemist will be permitted time and funding to be involved in continuing education activities as part of maintenance of competence. This involves attending one or more professional meetings per year.
- Maintenance of competence is compulsory in order to maintain Fellowship in the Canadian Academy of Clinical Biochemistry.

Clinical

The discipline mix can vary from a highly specialized academic laboratory to a core laboratory involving biochemistry, hematology, and coagulation and some microbiology. The exact role of the Clinical Biochemist depends on matters discussed in the preamble. (S)he may direct, provide advice (consult), manage, supervise etc., depending on circumstances. Clinical Biochemists are involved in activities such as the following:

- Test selection, utilization, restriction, and audits.
- Interpretation of patient laboratory test results for screening, diagnosis, management and monitoring of disease processes.
- Development, implementation and monitoring of testing algorithms, clinical practice guidelines, care maps in consultation with clinicians.
- On-call coverage as required (up to 24 hours, 7 days a week). This may include contact with patients in some circumstances.
- Monitoring test clinical performance (clinical sensitivity and specificity, reference intervals, diagnostic cut points, cost-effectiveness etc).
- Pre-analytical requirements for testing (e.g. patient preparation, sample procurement, transportation and storage)
- Post-analytical aspects (e.g. reporting format, timeliness, handling of critical and abnormal results, etc)
- Policies and procedures to ensure the laboratory meets local, Provincial, National and International regulatory requirements and standards of practice.
- A clinical manual for users of the laboratory service (e.g. nurses and physicians).

- Point-of-care (near to the patient) testing. This activity involves anything from instrument selection to results reporting, including instrument evaluation, staff training, proficiency testing, etc.
- Member of medical staff of institution (either as a full member or in an associate or affiliate manner).

Analytical

The exact role of the Clinical Biochemist depends on matters discussed in the preamble. (S)he may direct, provide advice, manage, supervise etc., depending on circumstances. Clinical Biochemists are involved in activities such as the following:

- Test method and instrument selection.
- Method validation (including analytical sensitivity and specificity, reporting limits, bias and precision, correlation with other methods, clinical validation, etc).
- Laboratory Information System and related matters (Hospital Information System, interfacing, etc).
- Procedures manuals for laboratory and point of care testing staff.
- Referral laboratories selection, and which tests are to be referred.
- Development of new tests, research and development of testing services.
- Performing and reporting certain specialised tests.

Quality Improvement and Safety

- Internal quality control, including selection of materials, selection of flagging rules, identifying responses to flags, etc.
- External proficiency testing, quality assurance.
- Quality improvement, including selection of appropriate indicators, performing audits.
- Safety manual and related issues – facility design, chemical, biological, radiation and other safety matters, WHMIS, disaster plan and risk management.

Administration and Management

This is perhaps the most variable in terms of roles, which can vary anywhere between directing all activities to no administrative role at all.

- Reporting to the Clinical Head of Department and/or Vice President or equivalent positions.
- Directing, managing, etc., a Department or Division or Section of a Clinical Biochemistry or Core Laboratory.
- Point of Care testing (see above).
- Strategic planning for the service.
- Staff (technical, clerical, administrative) - hiring and discipline; training; performance evaluation; continuing education; motivation, etc.
- Serving on institutional committees, including medical staff committees.
- Ensuring patient confidentiality.

- Workload assessment, documentation.
- Budget process, including capital equipment, operating expenses, staff.
- Serving on academic committees, as appropriate to the institution.

Education

- Professional development of laboratory staff.
- Professional development of users of the laboratory services (e.g. presentations at rounds, etc).
- Education for self-improvement.
- Education of the public about utilization and interpretation of laboratory tests.

Academic (research and teaching)

This is usually more a function in academic institutions, but not confined to them.

- Collaborative research, facilitation of clinical research of others.
- Funded research (granting agencies, industry).
- Peer review of scientific papers and grant applications.
- Supervision of undergraduate, graduate and post-graduate students.
- Teaching at undergraduate, graduate and post-graduate levels.
- Teaching of peers.
- Teaching of staff.
- Education of members of the public.

Professional Activities

- Membership and involvement in relevant local, provincial, national and international professional societies (Canadian Society of Clinical Chemists and its provincial sections, Canadian Academy of Clinical Biochemistry, International Federation of Clinical Chemistry and Laboratory Medicine, others).
- Setting the standards of practice of laboratory medicine in such professional societies.
- Maintaining documentation of on-going competence in the profession of Clinical Biochemistry as required by bodies such as the Canadian Academy of Clinical Biochemistry
- Acting as expert witness in court (e.g. toxicology).

Sources of Job Descriptions Consulted:

Individuals in British Columbia, Alberta, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia and Newfoundland.

Ontario Society of Clinical Chemists.

L'Ordre des chimistes du Québec.

College of Physicians and Surgeons of Ontario.

Association of Clinical Biochemists (U.K.)