



IFBLS

International Federation of
Biomedical Laboratory Science

IFBLS Guidelines for Core Competence

Guidelines for Core Competencies describe the competences expected of a Biomedical Laboratory Scientist.

What these guidelines do

These guidelines, produced by the International Federation for Biomedical Laboratory Science (IFBLS), provide professional best practice guidance and standards to support the delivery of high-quality, effective, safe and efficient clinical laboratory diagnostic services, whether provided in a hospital laboratory environment, a remote clinic, near-patient environment or community service. They are complementary to the IFBLS Code of Ethics (1).

IFBLS uses the term “Biomedical Laboratory Scientist” as the preferred title for the profession in order to recognise the scientific and practical laboratory knowledge that underpins professional knowledge and expertise which can be used to inform the interpretation of laboratory results for clinical diagnosis, research and academic teaching. These guidelines apply to Biomedical Laboratory Scientists (or equivalent professional titles). IFBLS will also use these guidelines to promote global recognition of the profession and make the case for categorisation of the occupation of Biomedical Laboratory Scientist within the International Standard Classification of Occupations (ISCO) classification Major Group 2 (Professionals), sub-group 22 (Health Professions).

What these guidelines do not do

These guidelines do not attempt to be fully prescriptive about which tests, roles or functions can be undertaken by Biomedical Laboratory Scientists.

These guidelines should be read in conjunction with member associations’ own guidelines and standards for Core Competence which should be informed by the principles referred to above.

Terms and abbreviations

Core Competence

A Competence is a knowledge, skill, or ability that contributes to the successful completion of a task. A Core Competence is the ability to perform the activities within a professional occupation to the standard expected in employment settings.

Introduction

There are differences in the practice of Biomedical Laboratory Science among countries and regions throughout the world regarding:

- Academic preparation requirements
- Access to, and requirement for, continuing professional development
- Access to advanced practice education
- Recognition as a profession
- Regulation of the profession through legislation and governmental authorization or registration
- Existence of professional associations and unions
- Ethical guidelines described in codes of ethics
- Number of Biomedical Laboratory Scientists in the workforce compared to the population and community's need

The IFBLS Guidelines for Core Competence was first adopted in 2012 based on member surveys and discussions, and they were revised in 2016 and 2022.

It is a goal for IBLs that the Curriculum forming Biomedical Laboratory Scientists will ensure these core competencies are met, as a minimum standard. This will promote the standard of education globally, facilitating the preparation for professionals to move to a higher academic level and to contribute to the development of the specialties of biomedical laboratory science. The Core Competencies can be used as a tool to demonstrate the range of Biomedical Laboratory Scientist's professional accountability and autonomy and to aid in the development of national competency standards and career documents.

Biomedical Laboratory Scientist is a profession which must adapt constantly to many changes in its practice, reflecting the trends in analytical methodologies, and improvements in diagnosis and treatment of disease and health care settings. Therefore, continuous review of this document is critical and to support the professional path and development of Biomedical Laboratory Scientists worldwide. Acknowledging the vibrancy of this profession and its constant development the IFBLS is committed to ensuring the provision of up-to-date Core Competencies reflecting developments in science and the professional response.

IFBLS shall use these guidelines and statements in collaboration with WHO and other organizations.

Policy statement and principles for IFBLS Guidelines for Core Competence

Core Competence

IFBLS Definition of Core Competence for Biomedical Laboratory Scientists

Biomedical laboratory science combines knowledge, skills and abilities in medicine, physical science, technology, and statistics with emphasis on analysing specimens from patients in order to aid in diagnosing and treatment of disease.

The Biomedical Laboratory Scientist education and training make the profession unique compared to other professions in terms of knowledge of quality assurance, evaluation of pre-analytical conditions and assessment of their impact, validation of medical laboratory analysis, considerations of uncertainty of measurement and biological variability and understanding of post-analytical situations used for diagnosis of disease, monitoring of treatment and evaluation of health status.

The Core Competences for the Biomedical Laboratory Scientist include a thorough understanding of the fundamentals of scientific and technical biomedical laboratory processes and how these inform clinical decision-making. This includes development and validation of clinical laboratory methods and techniques, implementation and verification of new analytical testing methods, quality assurance of biomedical analysis, the end-to-end process from when an analyte is ordered, and the sample collection through to the validation of the test result, interpretation of the test result and potential clinical implication and communication of the test result.

The Core Competences for Biomedical Laboratory Scientists are built on scientific methods (evidence-based) and the ethics of patient care.

The Biomedical Laboratory Scientist is an important resource for other healthcare professionals and the public regarding the use of safe and appropriate laboratory diagnostic testing.

Core Competencies Domains

LABORATORY OPERATION

Quality assurance

Implement a quality management system to ensure the entire analytical process is safe through pre-analytical, analytical, and post-analytical phases of testing.
Prepare and approve laboratory test procedure manuals and protocols.
Verify all methods for use in the appropriate analytical setting.
Identify and develop appropriate reference intervals for each laboratory analyte (test) with respect to populations served by the laboratory.
Assess staff in the laboratory to confirm they have the education and training to safely perform the analysis.
Review and monitor internal quality control and external quality assurance.
Document laboratory deviations, perform root cause analyses and maintain, populate and monitor a risk register.
Initiate and participate in continuous improvement work related to quality and patient safety.

Pre-analysis process

Define appropriate test request, specimen type and collection, pre-analytical storage and transport procedures.
Document receipt of specimens in the laboratory to ensure traceability.
Evaluate specimen suitability prior to analysis.
Prioritise laboratory requests based on clinical need and to arrange the laboratory workload.
Advise on choice of methodology and on factors which influence the validity of results.
Ensure correct preparation and storage of reagents and solutions.

Analytical process

Analyse specimens using appropriate/relevant techniques.
Assess the validity of data/test results against a possible range of outcomes.
Interpret validated test results.
Make decisions about reporting test results, repeating procedures, consulting senior staff and carrying out further testing within established guidelines.

Reporting and issuing laboratory test results

Verify laboratory test report with specimen identification.
Use administrative systems to communicate results.
Ensure the correct reference ranges and interpretative comments are provided to aid the clinicians treating the patient.
Ensure critical test results are given the correct attention and communicated promptly.
Ensure appropriate storage and disposal of specimens, data, and reports.
Report and issue therapeutic products e.g., blood products.

QUALITY IMPROVEMENT

Identify opportunities for improvement in the biomedical laboratory testing process and utilization of testing services.
Plan, design, perform, and implement quality improvement projects.

Employ quality management tools to create and follow quality improvement plans.
Instruct and supervise quality improvement projects.
Evaluate results of quality improvement projects and identify the need for further evaluation.
Implement findings of quality improvement projects.
Preparation and delivery of quality improvement reports and publications.
Audit of quality management system.
Audit of clinical diagnostic service.

LABORATORY SAFETY

Identify and correct unsafe work practices and breaches of regulations.
Ensure correct procedures are followed for acquisition, collection, transportation and disposal of biological, toxic and radioactive wastes.
Respond appropriately to emergency situations as they occur in the laboratory.
Participate in the maintenance of laboratory environment and equipment.
Complete risk assessments for all processes to ensure patient and staff safety.
Evaluate potential substitution of dangerous chemicals and or processes.

LABORATORY INFORMATICS

Employ informatics to communicate laboratory test results to clinicians and patients.
Test and verify laboratory information systems for use within the laboratory and for order communications and result reporting to electronic patient records.
Exploit informatic capabilities to support quality control and quality improvements.
Use of informatic tools to evaluate appropriate use of clinical diagnostic testing.
Use of informatic tools to monitor appropriate use of blood and blood products.

EDUCATION, TRAINING, AND LEADERSHIP

Train students and colleagues in the operation of instruments and equipment, the performance of methods and quality control procedures, the observation of safety measures in medical laboratories, and the safe use of Point of Care Testing in all care settings.
Provide instructions on collection, testing of specimens, interpretation and significance of test results.
Exchange information with, and provide guidance to, patients and other healthcare professionals.
Participate in interprofessional teams that provide patient-centered care to ensure that the clinical team understands the results provided and the limitations of the analysis.
Optimise relationships with suppliers and service users.
Manage and direct a laboratory.
Promote the profile of the profession to the community.

CONTINUING PROFESSIONAL DEVELOPMENT AND CAREER PROGRESSION

Establish and communicate personal goals in professional development.
Maintain and update scientific/technical knowledge and skills relevant to the enhancement of professional growth to benefit patients.
Reflect on learning to improve practice.
Mentor new graduates.

RESEARCH AND DEVELOPMENT

Plan, design, perform, and implement research and development projects.
Instruct and supervise research and development projects.
Evaluate research results and identify the need for further experimental work.
Prepare and deliver research/development reports and publications.
Incorporate results of research findings into routine practice.

ETHICS

Comply with the profession's Code of Ethics.
Demonstrate knowledge of contemporary ethical issues affecting biomedical laboratory science.
Accept responsibility for own actions/omission.
Make independent professional judgments.
Recognize one's own abilities and levels of professional competence and operate accordingly.
Adapt and respond to extraordinary crisis situations in the laboratory such as pandemic efforts.
Ensure that contingency plans are in place to provide, and report on, analysis in emergency situations where equipment or IT systems fail.

PUBLIC HEALTH

Identify and develop guidelines for appropriate use of laboratory diagnostics for population screening.
Identify and develop guidelines for appropriate use of laboratory diagnostics for managing and monitoring chronic diseases.
Contribute to public patient safety programmes.
Interrogate laboratory-generated data to provide information required for disease surveillance and population health initiatives.

COMMUNICATION

Maintain open lines of communication within the entire healthcare team.
Disseminate laboratory protocols to ensure patient safety and that testing is appropriate.
Advise on the appropriate use of laboratory services
Disseminate research and audit findings both intra and inter-professionally.

References

1. <http://www.ifbls.org/index.php/statements/code-of-ethics>