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Standards of proficiency

# Biomedical scientists

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# Foreword

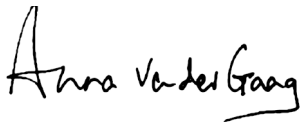
I am pleased to present the Health Professions Council's standards of proficiency.

We first published the standards of proficiency when our Register opened in July 2003. We began to review them in October 2005 to look at how they were working and to check whether they continued to reflect current practice as experienced by registrants, employers, educators and others. The review was led by a professional liaison group (PLG), which included members of our Council, as well as representatives from professional bodies and patient groups. We also held a formal consultation on the draft proposed standards. The review process and consultation produced extremely valuable feedback and we are grateful to all those who gave their time to help us in shaping the standards that follow.

We made a small number of changes to the previous standards, mainly to reflect developments in education, to clarify our intentions and to correct any errors or omissions. We also revised the introduction to explain more clearly the purpose behind the standards, especially in relation to registrants who specialise or move into non-clinical areas of practice.

I am confident that the standards are both fit for purpose and reflect current thinking in relation to safe professional practice across the professions.

These standards are effective from 1 November 2007.

A handwritten signature in black ink that reads "Anna van der Gaag". The signature is written in a cursive style with a long horizontal stroke at the end of the name.

**Anna van der Gaag**  
President

# Introduction

This document sets out the **standards of proficiency**. These are the standards we have produced for the safe and effective practice of the professions we regulate. They are the minimum standards we consider necessary to protect members of the public.

You must meet these standards when you first become registered. After that, every time you renew your registration you will be asked to sign a declaration that you continue to meet the standards of proficiency that apply to your scope of practice.

We also expect you to keep to our **standards of conduct, performance and ethics**, which are published in a separate document.

The standards of proficiency in this document include both generic elements, which apply to all our registrants, and profession-specific elements that are relevant to registrants belonging to one of the professions we currently regulate. The **generic standards are written in black**, and the **profession-specific standards are written in blue** to help you distinguish between them.

The generic standards explain the key obligations that we expect of you. Occasionally, we have pointed out specific elements of those key obligations. We have not attempted to create exhaustive lists of all the areas that each generic standard covers; we have simply highlighted specific elements where we consider this to be helpful.

## A note about our expectations of you

The standards of proficiency play a central role in how you can gain admission to, and remain on, the Register and thereby gain the right to use the protected title(s) of your profession.

It is important that you read and understand this document. If your practice is called into question we will consider these standards (and our **standards of conduct, performance and ethics**) in deciding what action, if any, we need to take.

The standards set out in this document complement information and guidance issued by other organisations, such as your professional body or your employer.

## Your scope of practice

Your scope of practice is the area or areas of your profession in which you have the knowledge, skills and experience to practise lawfully, safely and effectively, in a way that meets our standards and does not pose any danger to the public or to yourself.

We recognise that a registrant's scope of practice will change over time and that the practice of experienced registrants often becomes more focused and specialised than that of newly registered colleagues. This might be because of specialisation in a certain clinical area or with a particular client group, or a movement into roles in management, education or research.

**Your particular scope of practice may mean that you are unable to continue to demonstrate that you meet all of the standards that apply for the whole of your profession.**

As long as you make sure that you are practising safely and effectively within your given scope of practice and do not practise in the areas where you are not proficient to do so, this will not be a problem. If you want to move outside of your scope of practice you should be certain that you are capable of working lawfully, safely and effectively. This means that you need to exercise personal judgement by undertaking any necessary training and experience.

## Meeting the standards

It is important that our registrants meet our standards and are able to practise lawfully, safely and effectively. However, we don't dictate how you should meet our standards. There is normally more than one way in which each standard can be met and the way in which you meet our standards might change over time because of improvements in technology or changes in your practice. As an autonomous professional you need to make informed, reasoned decisions about your practice to ensure that you meet the standards that apply to you. This includes seeking advice and support from education providers, employers, colleagues and others to ensure that the wellbeing of service users is safeguarded at all times.

In particular, we recognise the valuable role played by professional bodies in representing and promoting the interests of their members. This often includes guidance and advice about good practice which can help you meet the standards laid out in this document.

## **Service users**

We recognise that our registrants work in a range of different settings, which include clinical practice, education, research and roles in industry. We recognise that different professions sometimes use different terms to refer to those who use or who are affected by their practice and that the use of terminology can be an emotive issue.

We have tried to use a term in the generic standards which is as inclusive as possible. Throughout the generic standards we have used the term 'service users' to refer to anyone who uses or is affected by the services of registrants. Who your service users are will depend on how and where you work. For example, if you work in clinical practice, your service users might be your patients or your staff if you manage a team. The term also includes other people who might be affected by your practice, such as carers and relatives. In the profession-specific standards, we have retained the terminology which is relevant to each individual profession.

## **These standards may change in the future**

We have produced this new version of our standards after speaking to our stakeholders about how the standards were working and how relevant they were to registrants' practice.

We will continue to listen to our stakeholders and will keep our standards under continual review. So we may make further changes in the future to take into account changes in practice.

We will always publicise any changes to the standards that we make by, for instance, publishing notices on our website and informing professional bodies.

# Expectations of a health professional

## **1a Professional autonomy and accountability**

Registrant biomedical scientists must:

### **1a.1 be able to practise within the legal and ethical boundaries of their profession**

- understand the need to act in the best interests of service users at all times
- understand what is required of them by the Health Professions Council
- understand the need to respect, and so far as possible uphold, the rights, dignity, values and autonomy of every service user including their role in the diagnostic and therapeutic process and in maintaining health and wellbeing
- be aware of current UK legislation applicable to the work of their profession
- [be aware of the British, European and International Standards that govern and affect pathology laboratory practice](#)

### **1a.2 be able to practise in a non-discriminatory manner**

### **1a.3 understand the importance of and be able to maintain confidentiality**

### **1a.4 understand the importance of and be able to obtain informed consent**

### **1a.5 be able to exercise a professional duty of care**

### **1a.6 be able to practise as an autonomous professional, exercising their own professional judgement**

- be able to assess a situation, determine the nature and severity of the problem and call upon the required knowledge and experience to deal with the problem
- be able to initiate resolution of problems and be able to exercise personal initiative
- know the limits of their practice and when to seek advice or refer to another professional

- recognise that they are personally responsible for and must be able to justify their decisions

**1a.7 recognise the need for effective self-management of workload and resources and be able to practise accordingly**

**1a.8 understand the obligation to maintain fitness to practise**

- understand the need to practise safely and effectively within their scope of practice
- understand the need to maintain high standards of personal conduct
- understand the importance of maintaining their own health
- understand both the need to keep skills and knowledge up to date and the importance of career-long learning

**1b Professional relationships**

Registrant biomedical scientists must:

**1b.1 be able to work, where appropriate, in partnership with other professionals, support staff, service users, and their relatives and carers**

- understand the need to build and sustain professional relationships as both an independent practitioner and collaboratively as a member of a team
- understand the need to engage service users and carers in planning and evaluating diagnostics, treatments and interventions to meet their needs and goals
- be able to make appropriate referrals
- understand the team and discipline approach to the provision of pathology services
- be aware of the general working of a hospital

**1b.2 be able to contribute effectively to work undertaken as part of a multi-disciplinary team**

**1b.3 be able to demonstrate effective and appropriate skills in communicating information, advice, instruction and**

### **professional opinion to colleagues, service users, their relatives and carers**

- be able to communicate in English to the standard equivalent to level 7 of the International English Language Testing System, with no element below 6.5<sup>1</sup>
- understand how communication skills affect the assessment of service users and how the means of communication should be modified to address and take account of factors such as age, physical ability and learning ability
- be able to select, move between and use appropriate forms of verbal and non-verbal communication with service users and others
- be aware of the characteristics and consequences of non-verbal communication and how this can be affected by culture, age, ethnicity, gender, religious beliefs and socio-economic status
- understand the need to provide service users (or people acting on their behalf) with the information necessary to enable them to make informed decisions
- understand the need to use an appropriate interpreter to assist service users whose first language is not English, wherever possible
- recognise that relationships with service users should be based on mutual respect and trust, and be able to maintain high standards of care even in situations of personal incompatibility
- be able to inform colleagues and relevant members of the clinical team of outcomes of biomedical procedures to unambiguous standards

#### **1b.4 understand the need for effective communication throughout the care of the service user**

- recognise the need to use interpersonal skills to encourage the active participation of service users

<sup>1</sup> The International English Language Testing System (IELTS) tests competence in spoken and written English. Applicants who have qualified outside of the UK, whose first language is not English and who are not nationals of a country within the European Economic Area (EEA), have to provide evidence that they have reached the necessary standard. We accept a number of other tests as equivalent to the IELTS examination. Please visit our website for more information.

# The skills required for the application of practice

## **2a Identification and assessment of health and social care needs**

Registrant biomedical scientists must:

### **2a.1 be able to gather appropriate information**

- be able to select suitable specimens and procedures relevant to patients' clinical needs, including collection and preparation of specimens as and when appropriate

### **2a.2 be able to select and use appropriate assessment techniques**

- be able to undertake and record a thorough, sensitive and detailed assessment, using appropriate techniques and equipment
- be able to demonstrate practical skills in the essentials of measurement, data generation and analysis
- be aware of the need to assess and evaluate new diagnostics prior to routine use

### **2a.3 be able to undertake or arrange investigations as appropriate**

### **2a.4 be able to analyse and critically evaluate the information collected**

- be able to investigate and monitor disease processes and normal states
- be able to use tables and graphs in order to analyse experimental data
- be able to use standard operating procedures for analyses including point of care in vitro diagnostic devices
- be able to use statistical packages and present data as graphs and tables

## **2b Formulation and delivery of plans and strategies for meeting health and social care needs**

Registrant biomedical scientists must:

### **2b.1 be able to use research, reasoning and problem-solving skills to determine appropriate actions**

- recognise the value of research to the critical evaluation of practice
- be able to engage in evidence-based practice, evaluate practice systematically and participate in audit procedures
- be aware of a range of research methodologies
- be able to demonstrate a logical and systematic approach to problem solving
- be able to evaluate research and other evidence to inform their own practice
- be able to design experiments, report, interpret and present data using scientific convention, including application of SI units and other units used in biomedical practice

### **2b.2 be able to draw on appropriate knowledge and skills in order to make professional judgements**

- be able to change their practice as needed to take account of new developments
- be able to demonstrate a level of skill in the use of information technology appropriate to their practice

### **2b.3 be able to formulate specific and appropriate management plans including the setting of timescales**

- understand the requirement to adapt practice to meet the needs of different groups distinguished by, for example, physical, psychological, environmental, cultural or socio-economic factors
- be able to identify the cause of procedural anomalies and implement remedies

### **2b.4 be able to conduct appropriate diagnostic or monitoring procedures, treatment, therapy or other actions safely and skilfully**

- understand the need to maintain the safety of both service users and those involved in their care

- be able to perform and supervise scientific and technical procedures to reproducible standards
- be able to operate and utilise specialist equipment according to their discipline
- be able to validate scientific and technical data and observations according to pre-determined quality standards
- be able to demonstrate proficiency in liquid handling methodologies, including preparation of standard solutions and buffers
- be able to demonstrate practical skills in instrumentation and techniques in: microscopy; spectroscopy; centrifugation; electrophoresis; chromatography; electroanalytical techniques; automated analysis; immunological techniques; enzyme assays and molecular biology techniques; sterilisation techniques and microbial culture; identification and quantitation of microorganisms; microtomy
- be able to demonstrate practical skills in the processing and analysis of specimens including specimen identification, the effect of storage on specimens and the safe retrieval of specimens
- be able to demonstrate practical skills in the investigation of disease processes
- be able to work in conformance with standard operating procedures and conditions
- be able to work with accuracy and precision
- be able to prepare reagents accurately and consistently
- be able to perform calibration and quality control checks
- be able to check that equipment is functioning within its specifications and to respond appropriately to abnormalities
- understand the implications of non-analytical errors
- be aware of near-patient testing and non-invasive techniques

### **2b.5 be able to maintain records appropriately**

- be able to keep accurate, legible records and recognise the need to handle these records and all other information in accordance

- with applicable legislation, protocols and guidelines
- understand the need to use only accepted terminology in making records
  - recognise the risks and possible serious consequences of errors in both requests for, and results of, laboratory investigations
  - recognise the value of test results for clinical audit and as a reference source
  - be able to use systems for the accurate and correct identification patients and laboratory specimens
  - understand the need to adhere to protocols of specimen identification, including bar coding and electronic tag systems
  - be able to use computer systems for test requesting and reporting
  - understand the importance of backup storage of electronic data

## **2c Critical evaluation of the impact of, or response to, the registrant's actions**

Registrant biomedical scientists must:

### **2c.1 be able to monitor and review the ongoing effectiveness of planned activity and modify it accordingly**

- be able to gather information, including qualitative and quantitative data, that helps to evaluate the responses of service users to their care
- be able to evaluate intervention plans using recognised outcome measures and revise the plans as necessary in conjunction with the service user
- recognise the need to monitor and evaluate the quality of practice and the value of contributing to the generation of data for quality assurance and improvement programmes
- be able to make reasoned decisions to initiate, continue, modify or cease treatment or the use of techniques or procedures, and record the decisions and reasoning appropriately

- be able to select and apply quality and process control measures that have a statistical or measurable output
- be able to identify and respond appropriately to abnormal outcomes from quality indicators

### **2c.2 be able to audit, reflect on and review practice**

- understand the principles of quality control and quality assurance
- be aware of the role of audit and review in quality management, including quality control, quality assurance and the use of appropriate outcome measures
- be able to maintain an effective audit trail and work towards continual improvement
- participate in quality assurance programmes, where appropriate
- understand the value of reflection on practice and the need to record the outcome of such reflection
- recognise the value of case conferences and other methods of review

# Knowledge, understanding and skills

## 3a Knowledge, understanding and skills

Registrant biomedical scientists must:

### 3a.1 know and understand the key concepts of the bodies of knowledge which are relevant to their profession-specific practice

- understand the structure and function of the human body, relevant to their practice, together with knowledge of health, disease, disorder and dysfunction
- be aware of the principles and applications of scientific enquiry, including the evaluation of treatment efficacy and the research process
- recognise the role of other professions in health and social care
- understand the theoretical basis of, and the variety of approaches to, assessment and intervention
- know the structure, function and metabolism of molecules of biological importance
- understand the structure, function and control of normal and altered genetic material and associated investigative techniques
- understand the immune response in health and disease
- understand the basic structure, classification, biochemistry and control of pathogenic agents
- know the role of the laboratory in the diagnosis and monitoring of specific disease conditions
- understand the role of the following in the diagnosis and treatment of disease: cellular pathology; clinical biochemistry; clinical haematology; clinical immunology; medical microbiology; medical genetics; transfusion science
- be able to evaluate analyses using qualitative and quantitative methods to aid the diagnosis, screening and monitoring of health and disorders

- understand the techniques and associated instrumentation used in the practice of biomedical science

**3a.2 know how professional principles are expressed and translated into action through a number of different approaches to practice, and how to select or modify approaches to meet the needs of an individual, groups or communities**

**3a.3 understand the need to establish and maintain a safe practice environment**

- be aware of applicable health and safety legislation, and any relevant safety policies and procedures in force at the workplace, such as incident reporting, and be able to act in accordance with these
- be able to work safely, including being able to select appropriate hazard control and risk management, reduction or elimination techniques in a safe manner in accordance with health and safety legislation
- be able to select appropriate personal protective equipment and use it correctly
- be able to establish safe environments for practice, which minimise risks to service users, those treating them, and others, including the use of hazard control and particularly infection control
- understand sources of hazard in the workplace, including specimens, raw materials, clinical waste and equipment
- be aware of immunisation requirements and the role of occupational health
- know the correct principles and applications of disinfectants, methods for sterilisation and decontamination, and for dealing with waste and spillages correctly
- know the use and application of engineering controls, eg mechanical ventilation systems such as fume cupboards or microbiological safety cabinets
- understand the application of principles of good laboratory practice relevant to health and safety







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