



The Royal College of Pathologists
Pathology: the science behind the cure

The clinical scientist in pathology

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This paper was approved by Council in January 2005, subject to consultation.

In accordance with the College's publications policy, it was then placed on the Fellows' and Members' area of the College website for consultation, from 24 January to 21 February 2005. Sixteen people submitted detailed comments. The lead author, Dr Graham Beastall, considered the feedback and amended the document accordingly.

Please email publications@rcpath.org if you wish to see Dr Beastall's responses to the feedback received.

Professor John A Lee
Director of Publications

The clinical scientist in pathology

1 DEFINITION AND ROLE

The clinical scientist in pathology:

- is a science graduate with an honours degree who has received extensive specialist postgraduate education and training in one discipline of pathology (see Appendix 1)
- is registered as a clinical scientist with the Health Professions Council
- is responsible for one or more areas of evidence-based practice whilst working within a team environment
- uses scientific principles and methods to design, plan, undertake and report on clinical investigations related to patient care and to maintain the efficacy, quality and safety of investigative and/or therapeutic techniques
- has high level skills to interpret and communicate the clinical significance of results of scientific investigations to other healthcare professionals, particularly medical doctors
- initiates and undertakes scientific research and development
- undertakes strategic planning involving his/her service in the wider context of patient-centred care; sets the strategic direction of the service, if appropriate to appointment
- manages scientific, personnel and financial resources, appropriate to the appointment
- participates in continuing professional development, lifelong learning and performance review.

2 EDUCATION AND TRAINING

Entry for training as a clinical scientist requires an honours degree in a scientific subject that is relevant to the chosen discipline of pathology. There are a number of primary degrees that are recognised as having the necessary core knowledge and skills modules for graduates who wish to enter the various disciplines of pathology.

Training as a clinical scientist in pathology takes place at postgraduate level and will normally take a minimum of eight years, divided into pre-registration (four years) and higher specialist training (four years). As part of this postgraduate training, the clinical scientist receives additional education and training, to a minimum of Master's degree level, together with practical experience of vocational learning under supervision.

Increasingly, the end point of training for the clinical scientist in pathology is to the standard embodied in Membership of The Royal College of Pathologists (MRCPATH) by examination, where the trainee clinical scientist sits an examination identical to or very closely related to the examination sat by specialist registrars. Many clinical scientists will enter with or gain a research PhD during the eight-year training period. Some clinical scientists will choose not to attain MRCPATH and will perform sub-consultant service and/or research roles.

The clinical scientist will be registered with the Health Professions Council and will practise independently within a team environment, either at consultant level or under the guidance of a consultant clinical scientist in the discipline or of a consultant medical practitioner in the discipline.

The usual outcome of training is that the clinical scientist will become competent across the range of one discipline before developing further within that discipline to practise at a higher or more specialist level. Alternatively, the clinical scientist may opt to gain broader knowledge and

experience to enable practice in a related discipline, in line with the goals of a more flexible workforce within the National Health Service. In either situation, the clinical scientist's job role can be described by the Healthcare Science Career Pathway.

3 COMPETENCES

The role of the clinical scientist can be defined in terms of specific competences.

The clinical scientist in pathology is expected to be competent to:

- use professional judgement in advising clinicians on the appropriate investigations for individual patients as a member of the clinical team caring for that patient
- use professional judgement to instigate additional investigations in his/her specialty that may be appropriate to an individual patient as a member of the clinical team caring for that patient
- use professional judgement to give detailed clinical interpretation of results for individual patients, which may include guidance on additional investigations or therapeutic interventions for the management of that patient
- identify and be responsible for the standards of any part of the service for which he/she is responsible and be personally professionally accountable for all advice given
- ensure the maintenance of a safe and effective service through the use of relevant quality assurance and audit tools, both within the service environment and in the broader clinical setting (e.g. audit of patient care pathway compliance)
- ensure that the effectiveness of any services provided outside of the usual boundaries of the specialty, e.g. point-of-care testing, including testing in the home, is maintained to accepted best practice standards
- ensure that any problems related to the effectiveness of the service that are identified through the process of quality assurance and audit are resolved quickly, lessons learned and procedures changed to prevent recurrence
- contribute to the training of all staff and users of the service in which he/she is competent
- review patients' and clinicians' needs linked to constant surveillance of medical and scientific literature, in order to ensure continuous development of the service
- apply scientific methods to solving new diagnostic and therapeutic problems
- introduce and advance new scientific and clinical procedures for the benefit of patients
- support the clinical research of the team(s) with which he/she is directly associated and more generally within the service
- contribute to the development of guidelines and patient care pathways within an evidence-based framework
- practise in a specialist area within a broader discipline.

At consultant level (Grade C), the clinical scientist will demonstrate additional competences and will practise at the same level as a medical consultant. He or she will be expected to:

- provide clinical leadership for an area of service
- be accountable for that service within a healthcare provider organisation
- set the strategic direction of that service within the framework of the needs identified by national priorities, established standards of practice and the needs of the local organisation

- establish and be responsible for the standards of practice, in accordance with recognised criteria, within the service for which he/she is responsible
- procure the technology and other services needed to provide an effective service
- direct the clinical research of the team(s) with which he/she is directly associated
- ensure that the clinical governance needs of the organisation are met in regard of the service for which the individual may be responsible
- contribute to strategic planning of the organisation in which his/her service resides or which it serves.

4 KNOWLEDGE, UNDERSTANDING, SKILLS AND EXPERIENCE

In order to fulfil the competences identified above, the clinical scientist in pathology requires knowledge, understanding, skills and experience to:

- be conversant with a wide body of knowledge related to the specialist field in which he/she has been shown to be competent and therefore qualified to practise
- keep up to date with developments within his/her discipline and areas of specialism by maintaining appropriate continuing professional development and personal development plans
- be able to access knowledge relevant to the issues that arise in relation to the provision of an effective service, in particular in relation to the case of individual patient care
- be able to use scientific principles and method to identify the clinical problems, undertake the necessary investigations and interpret the results in an attempt to provide a solution to the problem
- be able to apply these principles to routine investigations, unresolved problems and new research questions
- interpret complex data from a number of sources (e.g. other diagnostic disciplines, clinical history), draw conclusions and then provide guidance and advice in relation to individual patient management within the context of the clinical team responsible for that patient
- critically review scientific literature, as well as new research data, in order to be able to draw robust and valid conclusions that may be used in patient care
- communicate effectively within a multidisciplinary team
- work as part of or lead a multidisciplinary team
- manage scientific, personnel and financial resources effectively within the limits set by the organisation
- innovate, lead and direct change.

Appendix 1 Scientific disciplines within pathology

Cellular science

Clinical biochemistry

Clinical cytogenetics

Clinical embryology

Clinical immunology

Clinical microbiology
Haematology
Histocompatibility and immunogenetics
Molecular genetics
Toxicology
Transfusion medicine

Standing Committee for Clinical Science
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