

**COMPETENCES REQUIRED FOR APPLICANTS  
TO ATTAIN STATE REGISTRATION AS CLINICAL SCIENTISTS**

**SPECIALTY :**

**Clinical Immunology**



This document comprises a discipline-specific version of the general competence document and provides additional guidance as to how to complete the general document, Appendix 1 of the Guidelines, that you must submit with your application.

Remember that the aim of the process is for the candidate to satisfy the assessor that he or she has the appropriate basic qualifications and length of experience for issue of the Certificate of Attainment, and that the training programme/period of supervised practice has enabled the candidate to achieve the basic level of competence required for registration as a clinical scientist.

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<b>GENERIC COMPETENCES</b>		<b>SPECIFIC COMPETENCES</b>
	<b>1-SCIENTIFIC</b>	Be able to demonstrate the rigorous application of scientific methods in his/her experience to date
Sci1	<ul style="list-style-type: none"> <li>understanding the science that underpins the specialty (modality) and the broader aspects of medicine and clinical practice</li> </ul>	<ul style="list-style-type: none"> <li>must be able to advise on choice and preparation of samples and of categories of patients relevant to the investigations</li> <li>must be familiar with the evidence for, and limitations of, the common procedures used in the diagnosis and management of patients with suspected immunological disorders</li> <li>must understand the scientific basis of the technical procedures employed in investigating a patient's immunological status</li> <li>must be familiar with scientific developments in clinical immunology and in other relevant disciplines</li> <li>must have a working knowledge of related disciplines to be able to integrate relevant immunodiagnostic results into a meaningful interpretation</li> <li>must have an understanding of how therapeutic or prophylactic stimulation or suppression of immunological function is used in clinical management – and of how the outcome of such patients may be investigated, predicted and monitored for iatrogenic adverse effects</li> </ul>
Sci2	<ul style="list-style-type: none"> <li>demonstrating a strong base of knowledge appropriate to the specialty and to the investigations and therapeutic options available</li> </ul>	
Sci3	<ul style="list-style-type: none"> <li>experience of searching for knowledge, critical appraisal of information and integration into the knowledge base</li> </ul>	
Sci4	<ul style="list-style-type: none"> <li>ability to apply knowledge to problems associated with the routine provision, and development, of the service</li> </ul>	
Sci5	<ul style="list-style-type: none"> <li>ability to identify the clinical decision which the test/intervention will inform</li> </ul>	
Sci6	<ul style="list-style-type: none"> <li>ability to make judgements on the effectiveness of procedures</li> </ul>	
Sci7	<ul style="list-style-type: none"> <li>application of the knowledge base to the specialty (modality) and to the range of procedures/investigations available</li> </ul>	
<i>Achievement of:</i>	<ul style="list-style-type: none"> <li>an understanding of the physicochemical and biological methods employed in the practice of diagnostic and therapeutic immunology</li> <li>an understanding of the design and application of guidelines and protocols for investigating immunological status</li> <li>an understanding of how to integrate the results of immunological tests with other pathological investigations and with the clinical examination</li> </ul>	
<i>Achieved through:</i>	<ul style="list-style-type: none"> <li>structural (course) teaching at postgraduate level (eg a knowledge-based MSc course or lecture programme) and active participation in National/Regional training seminars</li> <li>active participation in local research meetings together with evidence-based research work supervised at postgraduate level</li> <li>evidence-based presentation of methodological or clinically-based research at a standard suitable for peer-reviewed publication</li> </ul>	
<i>Assessed by:</i>	<ul style="list-style-type: none"> <li>the locally nominated educational/project supervisor (usually of consultant level) against agreed criteria of achievement and performance</li> <li>if taking a taught postgraduate course (eg MSc), outcome of the relevant course examinations</li> </ul>	

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<b>GENERIC COMPETENCES</b>		<b>SPECIFIC COMPETENCES</b>
	<b>2-CLINICAL</b>	Be able to demonstrate the following relevant to the contribution of his/her specialty to patient care:
Clin1	<ul style="list-style-type: none"> <li>to understand the requirements of accuracy and precision of a procedure in the context of diagnosis, prognosis, monitoring and treatment and to use that information appropriately</li> </ul>	<ul style="list-style-type: none"> <li>must have experience-based understanding of all aspects of the diagnostic process, comprising history-taking, the clinical examination, the formulation of differential diagnosis, the role of pathology and other clinical service investigations, and the consequent integration of knowledge relevant to the individual patient</li> <li>must be able to communicate effectively and sensitively, avoiding jargon, with a range of people of different national, social or cultural heritage</li> <li>must be familiar with the principles of evidence-based investigation and management (EBM) as applied to diagnosis, clinical monitoring and treatment of patients with disorders affecting the immune system</li> <li>must be able to advise on choice and preparation of samples and of categories of patients relevant to the investigations</li> <li>must have a core body of knowledge of the applications of fundamental (basic) immunological principles to understanding of the pathogenesis, clinical features and classification of the major categories of disorders affecting the immune system</li> </ul>
Clin2	<ul style="list-style-type: none"> <li>ability to provide interpretation of data and a diagnostic (therapeutic) opinion, including any further action to be taken by the individual directly responsible for the care of the patient</li> </ul>	
Clin3	<ul style="list-style-type: none"> <li>understanding of the wider clinical situation relevant to the patients presenting to his/her specialty</li> </ul>	
Clin4	<ul style="list-style-type: none"> <li>ability to develop/devise an investigation strategy taking into account the complete clinical picture</li> </ul>	
Clin5	<ul style="list-style-type: none"> <li>understanding of the clinical applications of his/her specialty and the consequences of decisions made upon his/her actions/advice</li> </ul>	
Clin6	<ul style="list-style-type: none"> <li>awareness of the evidence base that underpins the use of the procedures employed by the service</li> </ul>	
<i>Achievement of:</i>	<ul style="list-style-type: none"> <li>an understanding of the clinical features, typical and atypical presentations, diagnostic problems and therapeutic options for adults and children with primary or secondary immunodeficiency disorders, in autoimmune and rheumatological disease, in infective and neoplastic disorders affecting the immune system, in patients undergoing organ or stem-cell transplantation, and in extrinsic allergic or pseudoallergic disorders</li> <li>an evidence-based ability to formulate answerable clinical questions in typical and atypical case-scenarios in clinical immunology: to propose relevant investigations, to integrate patient-based knowledge, and to undertake option appraisal of patient management scenarios</li> <li>to have obtained experience of the practice of clinical and laboratory audit within areas of service immunology</li> </ul>	
<i>Achieved through:</i>	<ul style="list-style-type: none"> <li>attendance at a knowledge-based postgraduate course in clinical immunology</li> <li>participative attendance at clinicopathological and patient-based conferences, selected ward rounds on individual clinical problems and their follow-up, and construction of a personal 'case-book' of clinical experience of individual patients, under educational supervision</li> <li>attendance at selected (teaching) out-patient clinics (eg allergy, rheumatology, paediatric) where supervised contact between trainee and patient or relatives stimulates or enlarges clinical understanding (also recorded in 'case-book')</li> <li>regular tutorials with a (nominated) clinical educational supervisor to supplement local experience and attendance at national/regional training</li> </ul>	

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(RCPATH) days

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- the locally nominated educational supervisor by recording and discussion of progress at (annual) appraisals
- progress through a knowledge-based postgraduate course (eg at MSc level) by formative and summative assessment

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<b>GENERIC COMPETENCES</b>		<b>SPECIFIC COMPETENCES</b>
	<b>3-TECHNICAL</b>	Be able to demonstrate the following, relevant to the modality or area of specialisation in which he/she wishes to be recognised
Tech1	<ul style="list-style-type: none"> <li>understanding of the principles associated with a range of techniques employed in the modality including the appropriate use of Information Technology</li> </ul>	<ul style="list-style-type: none"> <li>must have achieved a high level of competence in performing analytical techniques and procedures in common use in clinical immunology at a standard that produces consistently valid results</li> <li>must have sufficient knowledge of the scientific, operational and material basis of immunological techniques to be able to recognise, solve and minimise problems connected with analytical performance</li> <li>must have, from an evidence base, a sufficiently detailed understanding of internal quality control, of the use of material reference standards of analytes and analytical reagents, and of the application of reference ranges of analyte values to detect results which may be out of kilter and where trouble-shooting may be required</li> <li>must understand from an experience base the principles and practice of external quality assessment, of audit and accreditation procedures, and of clinical and performance criteria, relevant to evaluating the reproducibility of the commonly requested immunological laboratory tests</li> </ul>
Tech2	<ul style="list-style-type: none"> <li>knowledge of the standards of practice expected from these techniques including positioning of patients for safe interventions</li> </ul>	
Tech3	<ul style="list-style-type: none"> <li>experience of performing these techniques</li> </ul>	
Tech4	<ul style="list-style-type: none"> <li>the ability to solve problems that might arise during the routine application of these techniques (troubleshooting)</li> </ul>	
Tech5	<ul style="list-style-type: none"> <li>understanding of the principles of quality control and quality assurance</li> </ul>	
Tech6	<ul style="list-style-type: none"> <li>experience of the use of quality control and quality assurance techniques including restorative action when performance deteriorates</li> </ul>	
<i>Achievement of:</i>	<ul style="list-style-type: none"> <li>fluency in performing the four main groups of immunological laboratory tests at a standard consistent with laboratory accreditation by CPA (UK) or its equivalent: (1) assay of immunoproteins present with body fluids, (2) assay of the potencies of antibodies to extrinsic antigens (as in allergy) and to tissue components (as in autoimmunity), (3) phenotypic and functional characterisation of white cell populations (eg in blood), (4) immunological and molecular biological techniques for the characterisation of HLA and related gene or protein expression (as in tissue typing or in immunohistology)</li> <li>understanding of the sources of variation that can occur in the performance of the major categories of immunological test procedures and a continued awareness of these in maintaining by example a climate of quality assurance within the laboratory</li> <li>a thorough understanding of the pre-and-post analytical phases of immunological laboratory practice in relation to the maintenance of analytical quality and operational efficiency of the service</li> <li>an understanding of the potential hazards associated with the handling of blood and other biological products in clinical immunology, of the controlling legislation (eg COSHH) and of procedures for risk assessment and awareness</li> </ul>	

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<i>Achieved through:</i>	<ul style="list-style-type: none"> <li>• participation in, and contribution to, the collective enthusiasm of a department that arises from its reputation for delivery of a high-quality immunological service</li> <li>• continued emphasis upon quality issues during apprentice-based instruction and assessment in detailed operating procedures</li> <li>• active participation in seminars, discussion groups and taught courses, on the scientific basis and clinical interpretation of immunological laboratory tests, which emphasise quality assurance, clinical performance parameters, accreditation, audit, health and safety</li> <li>• attendance at selected society meetings on laboratory immunology together with private study and literature awareness under the tutelage of an experienced Educational Supervisor</li> </ul>
<i>Assessed by:</i>	<ul style="list-style-type: none"> <li>• satisfactory progress through procedures and acquired knowledge recorded in a log-book (such as in a Grade A training manual)</li> <li>• progress through formative and summative assessments of a knowledge-based postgraduate (eg MSc) course that includes a substantial element of teaching and discussion of practical clinical immunology</li> <li>• the nominated Educational Supervisor(s) together with a Senior Clinical/Biomedical Scientist and appraisals by Regional Tutor/RITA-type procedures (where practicable)</li> </ul>

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<b>GENERIC COMPETENCES</b>		<b>SPECIFIC COMPETENCES</b>
	<b>4-RESEARCH AND DEVELOPMENT</b>	Be able to demonstrate a training in research which should include:
R&D1	<ul style="list-style-type: none"> <li>ability to read and critically appraise the literature</li> </ul>	<ul style="list-style-type: none"> <li>must be able to evaluate whether research/R&amp;D proposals are likely to advance existing knowledge and/or practice</li> <li>must have acquired the ability to critically appraise published research on a biomedical topic or clinical problem in immunology and to assess the importance and feasibility of investigating it further</li> <li>must be able to identify a meaningful hypothesis or answerable question about the topic or problem, to formulate indications for research aims and objectives by which a plan of investigation may be designed, monitored and appraised</li> <li>must have a high level of practical competence in any special techniques relevant to an intended or actual area of specialisation</li> </ul>
R&D2	<ul style="list-style-type: none"> <li>ability to develop the aims and objectives associated with a project</li> </ul>	
R&D3	<ul style="list-style-type: none"> <li>ability to develop an experimental protocol to meet the aims and objectives in a way that provides reliable and robust data (i.e. free of bias)</li> </ul>	
R&D4	<ul style="list-style-type: none"> <li>ability to perform the required experimental work ability to produce and present the results (including statistical analysis)</li> </ul>	
R&D5	<ul style="list-style-type: none"> <li>recognise the value of research and has the ability to critically appraise results in the light of existing knowledge and the hypothesis developed and to formulate further research questions</li> </ul>	
R&D6	<ul style="list-style-type: none"> <li>ability to present data and provide a critical appraisal to an audience of peers – both spoken and written</li> </ul>	
<i>Achievement of:</i>	<ul style="list-style-type: none"> <li>(electronic) literature searching of journal papers, systematic reviews and clinical reports, summarising current knowledge of a topic or problem, and critically appraising the literature by evidence-based criteria</li> <li>successfully framing a research question leading to an appropriate proposal, experimental design, and plan for analysing the likely results</li> <li>conducting research on a topic or problem, having acquired the necessary scientific/paraclinical/technical skills and knowledge</li> <li>completing a postgraduate thesis in formal style, on research undertaken personally, that includes critical appraisal of its objectives and results</li> <li>writing a formal research paper, on own work, for peer-reviewed publication, presenting the results verbally, and enhancing verbal and written communication skills thereby</li> <li>a reputation for critical thought, skilful and methodical approach to investigating a topic or problem in clinical immunology, and in formulating acceptable indications for continued research</li> </ul>	
<i>Achieved through:</i>	<ul style="list-style-type: none"> <li>experience in team research and thereby in collaborative design, execution, publication, budgeting, grant-getting, interpersonal relationships and etiquette</li> <li>guidance in how written and verbal communication of research findings or knowledge is adapted to the circumstances involved</li> </ul>	

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- formal training and assessment programmes as involved in taught postgraduate (MSc) courses within the discipline
- encouragement in building up a personal network of colleagues, contacts and collaborators at different levels of attainment, for advice and discussion of research findings and ideas, both within and outside the research group or department, and thereby to increase self-awareness and esteem
- participation in research seminars, journal clubs, informal meetings, and poster gatherings, in addition to experience of the more formal specialist society meetings and conferences
- instruction in methods of data display, analysis and presentation, and encouragement to pursue literary and linguistic interest

*Assessed by:*

- outcome of postgraduate courses where the research project forms part of summative assessment
- formatively, by supervisor, Regional Tutor, or RITA-type processes
- feedback from colleagues on verbal/poster presentations and written communications
- outcome of invitations to give research seminars outside the departmental setting



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<b>GENERIC COMPETENCES</b>		<b>SPECIFIC COMPETENCES</b>
	<b>5-COMMUNICATION</b>	Be able to communicate in both the written and spoken media to colleagues, peers and patients:
Com1	<ul style="list-style-type: none"> <li>ability to assess a situation and act accordingly when representing the specialty</li> </ul>	<ul style="list-style-type: none"> <li>must be able to communicate personally to colleagues within the discipline, and in other branches of the NHS and allied professions, with clarity of thought, expression, and purpose</li> <li>must be able to listen carefully, to check understanding, and to negotiate in difficult issues without triviality or hostility</li> <li>must be able to present scientific, technical, clinical and managerial information effectively, using a range of appropriate media, so as to maximise understanding whilst maintaining economy and essence of time</li> <li>must be able to educate and train colleagues generically and in the specialty, with enthusiasm and responsibility, in a variety of professional settings</li> <li>must have developed sufficient verbal and written communication skills, data handling ability, and peer-group relationships to present with confidence results of research for critical appraisal by colleagues and reviewers</li> </ul>
Com2	<ul style="list-style-type: none"> <li>ability to respond to enquiries regarding the service provided when dealing with clinical colleagues</li> </ul>	
Com3	<ul style="list-style-type: none"> <li>ability to communicate with patients, carers and relatives, the public and other healthcare professionals as appropriate</li> </ul>	
Com4	<ul style="list-style-type: none"> <li>ability to communicate the outcome of problem solving and research and development activities</li> </ul>	
Com5	<ul style="list-style-type: none"> <li>evidence of presentation of scientific material at meetings and in the literature</li> </ul>	
<i>Achievement of:</i>	<ul style="list-style-type: none"> <li>professional competence in communicating sensitively with patients, relatives, carers and the wider public about health and disease as well as about the complexities of clinical immunology</li> <li>an ability to communicate clearly, and with confidence, to clinical and other professional colleagues both within and outside the discipline of clinical immunology in both formal and informal settings</li> <li>an ability to educate and train others within and outside the clinical immunology department and to supervise the work of trainees as appropriate</li> <li>evidence of continuing and successful experience in the formal presentation of scientific, technical and clinical information in a range of media, through reports, specialist papers, posters, seminars, lectures, slide presentations as well as electronically</li> <li>an understanding of all aspects of information technology pertinent to the service provisions and support of a clinical immunology department, and the acquisition of an effective level of competence in its use to fulfil these requirements</li> <li>an understanding of the etiquette of professional communication, of the ethical considerations associated with communication to patients and their management, and the ability to show qualities of empathy and reassurance in relation to the circumstances of others</li> </ul>	

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<i>Achieved through:</i>	<ul style="list-style-type: none"> <li>• self-endeavour, in improving competence in communication skills, attendance at extra-mural seminars and practice-scenarios on interview skills, instruction in teaching and lecturing skills and information technology, and the combined use of different communication media</li> <li>• self-planned testing by participation in professional seminars and scientific meetings, active involvement in previously unfamiliar clinical situations such as ward rounds, clinic attendance, grand rounds, clinical audit as well as educational discussions on clinical governance and NHS organisation</li> <li>• gauging improvement in self-confidence whilst attending structured knowledge-based taught (MSc) course discussions where communication skills are evident and feedback is obtained spontaneously</li> <li>• personal study of the burgeoning literature on communication skills, under the tutelage of a consultant-level specialist in clinical immunology</li> </ul>
<i>Assessed by:</i>	<ul style="list-style-type: none"> <li>• the nominate local supervisor (usually of consultant level experience), by oral examination at summative assessment of an MSc course, and by senior colleagues in the department</li> </ul>

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<b>GENERIC COMPETENCES</b>		<b>SPECIFIC COMPETENCES</b>
	<b>6-PROBLEM SOLVING</b>	Be able to deal with the unexpected and thus be able:
PS1	• to assess a situation	<ul style="list-style-type: none"> <li>• must have a thorough knowledge of all aspects of the service and of guidelines to deal with and anticipate problematic circumstances</li> <li>• must appreciate that many such problems in clinical immunology are recognised by their timing or unusual association and that problem solving is enhanced by prior experience, training and knowledge</li> <li>• must be able to initiate and follow through the timely resolution of an impending or acute problem with confident action, direction and effective communication</li> <li>• must recognise and minimise circumstances that are associated with recurrence of a specific or related problem and communicate with others in circumventing this</li> </ul>
PS2	• determine the nature and severity of the problem	
PS3	• call upon the required knowledge and experience to deal with the problem	
PS4	• initiate resolution of the problem	
PS5	• demonstrate personal initiative	
<i>Achievement of:</i>	<ul style="list-style-type: none"> <li>• a detailed knowledge of all aspects of the department's operations, of their inter-relationships, and of the pre-, intra- and post-analytical factors that affect quality and service delivery</li> <li>• the competence to 'cover' or deputise under direction for staff discontinuity in the different aspects or areas of departmental activity, eg: scientific, technical, R&amp;D; quality assurance, audit, accreditation; scrutiny, reporting, clinical liaison; health, safety and staff training; IT, budgeting and deputy management</li> <li>• the communication skills required to interact with or supervise staff required in these areas of departmental work, so as to be aware of circumstances that may lead to the development of problems</li> </ul>	
<i>Achieved through:</i>	<ul style="list-style-type: none"> <li>• a structured training programme that provides rotational experience of immunological service areas and which is planned and assessed in order to increase participation and responsibility</li> <li>• evidence-based attendance and participation in training seminars and workshops in clinical immunology that include critical appraisal of clinical case scenarios and laboratory practices, that utilise problem-based learning, and that debate the principles of problem-solving</li> <li>• personal involvement in the recognition and solution of problems in departmental practice with opportunity for option appraisal and experience-based learning</li> <li>• attendance and participation in local and regional audit, clinical and managerial meetings which emphasise how problem-solving by experience enhances self-development</li> </ul>	

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- training advisors and supervisors, performance in structured seminars and appraisals
- outcome of knowledge-based taught courses (eg MSc)

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	<b>7-PROFESSIONAL ACCOUNTABILITY</b>	Be able to demonstrate an understanding of management principles and techniques, including the following:
Prof1	<ul style="list-style-type: none"> <li>Has read, understands and follows the Standards of Proficiency for Clinical Scientists and published by the Health Professions Council</li> </ul>	<ul style="list-style-type: none"> <li>must be able to recognise legal and ethical boundaries of the modality and practice and conduct research and practical routine immunology within these boundaries</li> <li>must understand the principles of clinical governance and be able to audit, reflect on and review practice</li> <li>must understand the importance of effective communication with colleagues and be able to function as an effective member of a multidisciplinary team</li> <li>must understand the need for and basic requirements of accreditation schemes appropriate to the modality of immunology</li> <li>must have acquired a basic understanding of the structure and organization of the department, and relevant financial aspects</li> <li>must have acquired a basic knowledge of health and safety requirements appropriate to the discipline</li> <li>must be able to recognise the limits of his/her knowledge and skills</li> <li>must participate in an appropriate CPD scheme (after completion of training)</li> <li>must understand the principles of appraisal and be able to supervise staff in his/her area of responsibility</li> </ul>
Prof2	<ul style="list-style-type: none"> <li>To be personally responsible for and must be able to justify their decisions</li> </ul>	
Prof3	<ul style="list-style-type: none"> <li>Understanding of the legal and ethical requirements of the modality, and the ethical aspects of scientific research.</li> </ul>	
Prof4	<ul style="list-style-type: none"> <li>Understands the need to practice safely and effectively within their abilities and can recognise the limits of personal practice and identify when to seek advice.</li> </ul>	
Prof5	<ul style="list-style-type: none"> <li>Ability to manage personal workload and prioritize tasks appropriately.</li> </ul>	
Prof6	<ul style="list-style-type: none"> <li>Can demonstrate competence in the principles of clinical governance including clinical audit, accreditation requirements relevant to the modality. This will include the importance of equality and diversity, confidentiality, informed consent and data security</li> </ul>	
Prof7	<ul style="list-style-type: none"> <li>Ability to contribute effectively to work undertaken as part of a multi-disciplinary team</li> </ul>	
Prof8	<ul style="list-style-type: none"> <li>Ability to supervise others as appropriate to area of practice. Understanding of the role of appraisal in staff management and development.</li> </ul>	
Prof9	<ul style="list-style-type: none"> <li>Understanding of the need and obligation for career-long self-directed learning and the importance of continuing professional development.</li> </ul>	
Prof10	<ul style="list-style-type: none"> <li>Understanding of the need for, and ability to establish and maintain, a safe practice environment. Understanding of the requirements and obligations of Health and Safety including infection control</li> </ul>	

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Prof11	<ul style="list-style-type: none"> <li>• Understanding of the structure and organization of the department and how it fits into the local clinical setting, General understanding of the way the modality is structured and practised in other locations within the UK. Basic understanding of the importance of financial accountability, budgetary control and resource management.</li> </ul>	
<i>Achievement of:</i>	<ul style="list-style-type: none"> <li>• an understanding of the management principles and tools used in the service</li> <li>• the ability to act as a professional and work effectively as part of a team</li> <li>• understanding of the importance and principles of accreditation, audit, confidentiality, data security and safe working practice</li> </ul>	
<i>Achieved through:</i>	<ul style="list-style-type: none"> <li>• a structured taught element (eg approved MSc course or approved lecture programme), participation in appropriate training programmes and local courses on general, personnel and financial management, health and safety, audit, etc</li> <li>• participation in local seminars and meetings, attendance at clinical audit meetings and clinical governance committees.</li> <li>• attendance at departmental management meetings</li> <li>• involvement, under supervision, in management within the laboratory</li> <li>• mentoring by an experienced practitioner</li> </ul>	
<i>Assessed by:</i>	<ul style="list-style-type: none"> <li>• the nominated local supervisor and appropriate professional body external advisor/tutors</li> </ul>	