

A novel foundation-year-two post in academic medicine

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A decline in the number of doctors pursuing careers in academic medicine poses a risk to medical research and training in the UK. This is happening at a time of major changes to postgraduate training, with the introduction of the Foundation Programme for newly qualified medical graduates in August 2005 and further changes to basic and higher specialist training expected thereafter.^{1,2} This paper describes an innovative training programme in academic medicine for foundation-year-two (F2) trainees. The 12-month programme provides training and practice in research, audit and medical undergraduate teaching in addition to traditional clinical training in medicine. Although in part dependent on the local infrastructure, it has key components that can be adapted by any academic unit in the UK.

The impending changes to postgraduate medical training were driven by several reports highlighting the lack of formal training and career progression for senior house officers (SHOs).^{3–5} Although some of the changes have yet to be fully confirmed, training is likely to become shorter, more intensive and competency based. All newly qualified UK graduates will enter a two-year foundation that equips them with the skills to enter higher specialist training.⁶ These reforms offer new opportunities to address the growing reluctance of middle-grade junior doctors to take an academic career path.⁷ The Academy of Medical Sciences has pointed to lack of infrastructure, inadequate funding and the complexity of legal and ethical governance frameworks as reasons for a declining base⁸ together with the personal academic disincentives of insufficient flexibility, prolonged insecurity and lack of career structure.⁹ A British Medical Association (BMA) report indicates that, of specialist registrars working towards a postgraduate research degree, two-thirds are doing so primarily for reasons of career progression and only 17% because of an interest in research. It is possible that some of those who begin with career motives have their interest ignited and switch to academic medicine; consequently, the Academy argued for preservation of key appointments at specialist registrar

grades along with new opportunities for senior SHOs at the completion of their general professional training.⁹ The National Health Service, as the main provider of UK healthcare, depends on a healthy research environment.¹¹ In addition to research, medical academics provide leadership in healthcare delivery and teaching.¹³ Teaching is becoming increasingly important as medical undergraduate numbers rise.

The two-year foundation programme provides an opportunity to develop innovative F2 posts in academic medicine. The Leicestershire, Northamptonshire and Rutland Deanery has funded two pilot posts, which started in August 2004 for one year, with further programmes planned for August 2005. Trainees are based in the Academic Medical Unit at the Leicester Royal Infirmary and the Department of Cardiovascular Sciences at the University of Leicester. The basic 40-hour week is split equally between clinical medicine and academic pursuits. In addition, trainees participate in emergency out-of-hours work on a rota identical to that of their SHO colleagues.

The specific aims of this programme are:

- To achieve all competencies in the Foundation Programme in preparation for higher specialist training
- To provide exposure to academic medicine, clinical science and evidence-based clinical practice as a foundation for a career in academic medicine
- To provide training and practice in bedside and tutorial-based undergraduate teaching
- To provide continuing professional development, including preparation for successful completion of part I of the MRCP examination.

Effectively, these posts offer a 'taster' of academic medicine—ideal for trainees who contemplate embarking on a clinical research training fellowship as a prelude to academic study as well as for those who are unsure whether they should commit themselves to such a career. Whatever the level of commitment, the trainee will get comprehensive clinical training in an academic environment. Importantly, he or she will be excluded from the Research Assessment Exercise, so this period can be specifically dedicated to training. The educational supervisors, the trainees and the postgraduate deanery will all contribute to the continuous assessment and evaluation of these posts.

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ACADEMIC PURSUITS

Four to five half-day sessions per week are dedicated to academic pursuits—the key components on which this pilot is founded. In this period, trainees will gain an understanding of the complexity of clinical research, data handling, interpretation, ethics and regulatory issues, data analysis and writing and presentation skills. All these are competencies relevant to the professional development of the trainee whether or not he or she ultimately pursues a research career. In addition, trainees will participate in audit and undergraduate teaching.

Research

This aspect of training is centred on studies conducted by the Vascular Medicine Group in the Department of Cardiovascular Sciences and includes attendance at weekly clinical research and laboratory research meetings. The group supports a range of clinical research projects and laboratory-based studies many of which are interlinked, providing opportunities for translational research. Current projects include vascular ageing in hypertension and diabetes, the cardiovascular effects of obesity and the monitoring of blood pressure. In addition, the group is involved in several investigator-led industry-funded multi-centre randomized controlled studies. Thus, trainees are exposed to many different aspects of clinical and laboratory research without being obliged to develop their own research project; nevertheless, it is anticipated that each trainee will identify a project of particular interest and work with the lead investigator, gaining hands-on experience. During the year, the trainee will be expected to complete one major review article in collaboration with one of the educational supervisors—a task that tests his or her skills in review of published work, critical appraisal and writing. In support of the trainees are nursing and administrative staff in the research unit. The group includes a non-clinical senior lecturer, a clinical lecturer, and clinical and non-clinical research fellows.

Clinical audit

During their attachment trainees initiate and undertake one audit project in either acute emergency or cardiovascular medicine. The NHS trust has a well-resourced clinical audit team that provides support and training.

Teaching

The F2 trainees teach both postgraduate and undergraduate students. As first-year SHO equivalents, they support the work of and teach newly qualified preregistration house officers in the course of their own clinical duties. One session per week is allocated to undergraduate teaching.

Primarily this consists of bedside clinical teaching for third, fourth and fifth year students. In addition, trainees participate in tutorials for first and second year students, teaching clinically relevant basic sciences in modules such as pharmacology and renal and cardiovascular medicine. Training in teaching methods is provided both formally and informally.

FORMAL TRAINING

The deanery funds 3 hours per week of formal off-site classroom training as part of the foundation-year programme. This teaching programme is generic to all year-two trainees. The curriculum (totalling 10 days) includes consultation skills, clinical governance, evidence-based practice, team working and time management, communication skills, mental health aspects and clinical skills. The following scheme enables academic medicine trainees working in acute and cardiovascular medicine to complete the required study leave allocation:

- Essential generic research skills training via six half-day sessions on the University of Leicester advanced post-graduate course, to include health and safety, small group teaching, writing skills and oral presentation skills
- Advanced Life Support course (3 days)
- Good Clinical Practice course (one session)
- Attendance as observer at Leicestershire Local Research Ethics Committee (one session)
- MRCP part I tutorials (one session equivalent)
- Up to 10 days' study leave for either private study (maximum 5 days) or attendance at trust SHO teaching programme specialty modules (maximum 5 days)

Other weekly core training opportunities exist within the clinical service framework:

- Lunchtime journal clubs that include presentations from trainees
- Post-clinic patient review training in hypertension
- Lunchtime physician grand rounds

ACADEMIC MEDICINE COMPETENCIES

Formal assessment by well-defined competencies is a key element of the Foundation Programme. Although individual competencies can be registered at any stage of the training, all competencies need to be satisfied before a trainee can progress to the next stage of the training programme. The generic curriculum includes forty competencies, including history-taking, communication skills, data interpretation and management of critically ill

patients. By reference to this framework four key academic medicine competencies have been identified:

- Literature review and critical appraisal
- Research governance, good clinical practice and ethics
- Research study design and planning
- Data interpretation and presentation of results

In addition, the clinical audit and teaching competencies as part of the generic curriculum are suitable for inclusion within the academic medicine remit.

Competencies are scored on a 9-point scale from unsatisfactory (score 1, 2 or 3) to good (7, 8 or 9). Anchor statements for each grade are provided as a guide for the assessor. This information is also available to trainees at the start of their programme so that they are familiar with the method of assessment and the required level of competence. Box 1 gives two examples of competency scoring; the full list is available from the authors.

CLINICAL PRACTICE

The clinical training programme is divided between a general medical ward (six months), the coronary care unit (three months) and an acute medical admissions unit (three months).

General medical ward

The ward admits a higher than average proportion of patients with renal and cardiovascular disease and diabetes, reflecting the interests of the consultant staff. Average inpatient stay is 5 days. It provides experience in continuing patient care across a broad spectrum of specialties.

Coronary care unit

The unit admits 4 to 5 acutely unwell patients each day, typically with acute coronary syndromes, severe heart failure/cardiogenic shock or malignant arrhythmias. In addition, trainees have the opportunity to undertake invasive procedures such as insertion of central lines for monitoring and inotrope therapy and cardiac pacing.

Medical admissions unit

This is consultant-led. Participation in unselected acute medical admissions provides the trainee with experience in the management of acute medical emergencies and additional practical skills including lumbar puncture and chest drain insertion.

Outpatient clinics

Trainees attend weekly consultant-supervised outpatient clinics in general medicine (six months), cardiovascular

Box 1 Competency scoring in two areas of academic medicine

<i>Research governance, good clinical practice and ethics</i>	
Score	
1-3	Is not able to understand the role of research governance in the conduct of clinical trials
4-6	Attends a local research ethics committee meeting and understands the roles of local and multicentre committees
	Successfully completes the International Committee on Harmonisation good clinical practice tutorial
	Obtains patients' consent appropriately for clinical studies
7-9	Understands the role of the NHS trust research and development office in study approval processes and event reporting during clinical studies
	Demonstrates a good understanding of the key ethical issues in the design and conduct of clinical studies
	Contributes to the writing of patient information leaflets and consent forms
<i>Research study design and planning</i>	
Score	
1-3	Is unable to understand the requirements for the design of clinical/laboratory studies
4-6	Comprehends the key requirements for the design of a research study, in particular hypothesis testing, statistical power and patient recruitment
	Is able to discuss the design of a study with colleagues
	Appropriately reviews clinical study patients and gains experience in data handling
7-9	Understands the complexity of multicentre randomized controlled trial standard operating procedures, clinical reviews, event reporting and termination
	Contributes to the design and writing of a clinical study

medicine (three months) and hypertension (three months). The clinics include both follow-up and new patients.

On-call commitment

A key component of the training is participation in out-of-hours clinical service. The NHS trust provides the funding for the on-call banding for the posts. The F2 trainees undertake on-call commitments identical to those of their SHO colleagues. The on-call rota is a partial shift predominantly covering the acute medical assessment wards in addition to coronary care and out-of-hours ward cover. Currently the average additional duty per week is 12 hours.

GENERIC ASSESSMENT

Most doctors will not yet be familiar with the depth of the assessments to which foundation-year trainees will be

exposed. The methods developed nationally will apply also to our pilot F2 trainees and include:

- The Mini-CEX (clinical evaluation exercise)—supervisor-observed short assessments of clinical skills during usual clinical practice. These are planned with the trainee in advance as either ward-based or clinic-based assessments. Three or four assessments are conducted during the year by different examiners
- Forty specific and defined competencies, assessed by the educational supervisor or supervising consultant/specialist registrar during an attachment. They embrace generic skills such as good clinical practice, communication skills, time management and organization, probity and ethical issues as well as core knowledge of acute emergency care, resuscitation and interpretation of investigations
- In the latter six months of the post, multisource appraisal in which the views of medical, nursing and administrative colleagues are solicited. Trainees are judged by their educational supervisor, three consultant/specialist registrar doctors, three SHO colleagues and four nursing/administrative staff. The educational supervisor and one observer provide feedback.

These formal assessments and the record of attendance at the formal foundation-year generic teaching are the basis for determining whether a trainee should progress to further specialist medical training.

CONCLUSION

This academic programme is designed to ensure that trainees acquire all the foundation competencies required for career progression. In addition, the training in generic research skills and exposure to clinical and laboratory research, within a clinical academic environment, will provide trainees with real-life exposure to the challenges and demands of a career in academic medicine and identify opportunities for progression along that career track for those wishing to do so.

The programme provides a stimulus for graduates to enter an academic career path; however, an increase in

recruits will not be the sole indicator of success. It also offers an opportunity for others to discover whether they are suited to a clinical academic career; and those who decide the answer is no will have gained skills in critical evaluation that will stand them in good stead in any specialty.

How, then, can the success of the academic F2 programme be measured? In the long term, as more places become available both locally and nationally for academic medicine, a prospective evaluation will be possible. At present the deanery simply proposes to track the career path of each academic trainee.

Although the scheme described here, based in a cardiovascular department, has special local features, we believe that its essentials could be translated to any academic medical unit in the UK.

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