

# A structured competency based training programme for junior trainees in emergency medicine: the "Dundee Model"

R J Cook, D K Pedley, S Thakore

See end of article for authors' affiliations

*Emerg Med J* 2006;23:18–22. doi: 10.1136/emj.2005.025072

Correspondence to:  
Shobhan Thakore,  
Accident and Emergency  
Department, Ninewells  
Hospital and Medical  
School, Dundee DD1 9SY,  
Scotland; shobhan.  
thakore@tuht.scot.nhs.uk

Accepted for publication  
26 May 2005

Recent changes in medical training prompted by Modernising Medical Careers and the New Deal requires a more structured, competency based training programme. This paper describes the development of such a programme in an emergency medicine department of a teaching hospital. It describes the process of design and the various aspects incorporated to develop a balanced system of training, appraisal, and assessment.

Recent years have seen significant changes in the approach to training the junior doctor.<sup>1</sup> The principles underlying the Modernising Medical Careers (MMC) initiative along with changes to junior doctors' working hours necessitate a more structured approach to senior house officer (SHO) training.<sup>1–3</sup> Carr<sup>1</sup> has already raised concerns that a full-shift working pattern combined with the reduction in working hours may lead to increased intensity of work and more fatigue.<sup>1</sup> This may then lead to less time at work for reflective learning and informal learning from peers.<sup>1</sup> The response to these issues should be the development of structured, supervised and well organised training.<sup>4,5</sup>

Emergency medicine departments have traditionally provided an environment rich in clinical material and exposure but often lacking in training frameworks with incorporated appraisal and assessment.<sup>6</sup> In this article we outline a competency based training programme for SHOs in emergency medicine.

## DESIGNING A NEW TRAINING PROGRAMME

MMC calls for a greater emphasis on trainee appraisal and ongoing assessment.<sup>3</sup> The ultimate aim is to promote broad based training with no more than four months spent in each post within a streamed Foundation programme, although initially some posts will be six months long.<sup>3</sup> Junior doctors will be expected to have demonstrated core competencies to progress from Foundation training. A core, generic list of competencies will be produced by a central working group. There will also be central guidance relating to the assessment of trainees.

In recognition of the changes ahead it is important that emergency medicine prepares by designing a competency based training programme. The programme in Tayside caters for 18 SHOs, who work on two sites in Dundee and Perth. The service in Dundee has 50 000 new patients per annum and includes an eight bedded short stay ward. The department in Perth has 25 000 new patients per annum. There are six consultants, six full time specialist registrars (SpRs), and one full time and one part time staff grade.

The SHO training programme is run in Dundee and was redesigned over a period of two years with the aim of

providing a framework for appraisal and assessment. The redesign was developed jointly by the Accident and Emergency Department (A&E) and the Clinical Skills Unit of Ninewells Hospital, Dundee. This was undertaken by a Consultant in Accident and Emergency and the Director of the Clinical Skills Unit, along with two of the senior SpRs in A&E. Training objectives were related to recommendations for good medical practice issued by the General Medical Council<sup>7</sup> (GMC) and the core practical competencies and teaching curriculum agreed by the development group.

The process of developing the programme was based on the assumption that the trainees are adult learners. A formal, structured teaching programme was developed in conjunction with attempts to structure experiential learning according to the steps described by Kolb.<sup>8</sup> As such it was expected that the trainees were committed to participating in learning opportunities. Time was protected for teaching, with trainees given three hours of protected time each week during which small group tutorials and SimMan (see below) sessions were scheduled. The trainee should feel supported, have access to a mentor outwith scheduled teaching, and have the opportunity to reflect on their practice. The development involved the following steps:

- Defining endpoints for junior trainees
- Structuring and developing teaching modalities
- Promoting reflective practice
- Formalising appraisal
- Developing assessment tools

## Defining endpoints for emergency medicine training

Central to the process of redesign was the definition of endpoints for emergency medicine junior trainees. These included the following:

- SHO training objectives specific to their time in emergency medicine and related to recommendations for good medical practice issued by the GMC (table 1).<sup>7</sup>

**Table 1** Training objectives in emergency medicine related to recommendations for good medical practice issued by the General Medical Council

| Emergency medicine training objective  | Good medical practice   |
|--|---|
| Demonstrate clinical skills and confidence in decision making in the context of emergency medicine | <p><b>Good clinical care:</b> Providing a good standard of practice and care</p> <p>Adequate assessment of the patient's conditions, based on the history and symptoms and an appropriate examination</p> <p>Providing or arranging investigations or treatment where necessary</p> <p>Taking suitable and prompt action when necessary</p> <p>Competent when making diagnoses and when giving or arranging treatment</p> <p>Recognition of and working within the limits of your professional competence</p> <p>Willing to consult colleagues</p> <p><b>Maintaining good medical practice</b></p> <p>You must keep your knowledge and skills up to date throughout your working life</p> <p><b>Good clinical care</b></p> <p>Keeping clear, accurate, legible and contemporaneous patient records which report the relevant clinical findings, the decisions made, the information given to patients, and any drugs or other treatment prescribed</p> <p>Keeping colleagues well informed when sharing the care of patients</p> <p><b>Good communication</b></p> <p>Good communication between patients and doctors is essential to effective care and relationships of trust</p> <p><b>Working with colleagues</b></p> <p>Respect the skills and contributions of your colleagues</p> <p>Maintain professional relationships with patients</p> <p>Communicate effectively with colleagues within and outside the team</p> <p>Make sure that your patients and colleagues understand your professional status and specialty</p> <p>Participate in regular reviews and audit of the standards and performance of the team, taking steps to remedy any deficiencies</p> <p>Be willing to deal openly and supportively with problems in the performance, conduct, or health of team members</p> <p><b>Teaching and training</b></p> <p>You should be willing to contribute to the education of students or colleagues</p> <p>If you have responsibilities for teaching you must develop the skills, attitudes, and practices of a competent teacher</p> |
| Demonstrate an understanding of the safe disposition of patients from emergency medicine           |   |
| Perform a number of basic emergency medicine practical procedures                                  |   |
| Demonstrate the appropriate involvement of senior staff in the department                          |   |
| Demonstrate clinical knowledge appropriate to the stage of training                                |   |
| Demonstrate good practice regarding note-keeping   |   |
| Interact appropriately with police officers and the legal system                                   |   |
| Demonstrate the ability to present cases appropriately to colleagues                               |   |
| Demonstrate good communication with patients and relatives   |   |
| Relating to nursing and other staff in the department  |   |
| Understand how to deal with the difficult or violent patients                                      |   |
| Avoid complaints   |   |
| Participate in departmental audit  |   |
| Demonstrate presentation skills at tutorials   |   |
| Attend SHO teaching sessions   |   |

- Clinical curriculum listing core subjects to be covered by small group tutorials and hence the core knowledge base expected by the end of training (table 2).
- Core practical competencies to be adequately demonstrated by SHOs either on patients or during simulated sessions:
  - Basic airway management
  - Spinal immobilisation
  - Basic life support
  - ECG interpretation
  - Safe defibrillation
  - Advanced life support
  - Wound description and management
  - Reduction of dislocation/fracture
  - Administration of sedation and analgesia
  - Description of x ray findings

### Teaching modalities

A programme of small group tutorials covered the topics outlined in the clinical curriculum. Tutorials were designed to be as interactive as possible and include practical skills based sessions. These were led by emergency medicine consultants and middle grade staff as well as selected external speakers. Each session was built around defined learning outcomes.

### Observed clinical practice

Clinical practice was observed formally and informally. For the majority of trainees clinical practice was observed informally through interaction with senior staff in the clinical setting. A trainee completed, under supervision, the core practical competencies identified in the learning

contract. Formal observed clinical practice involved the allocation of a trainee to a member of senior medical staff for a prescribed period. This period provided the opportunity for the trainee to observe an experienced practitioner and for the trainee's clinical capabilities to be assessed. The sessions aimed to cover common presentations and practical procedures. Our previous experience of formal observed practice of all trainees within the department showed it to be difficult to sustain because of demands on senior staff time. For this reason we reserved this teaching modality for SHOs whose progress had been identified as borderline or unsatisfactory.

### Simulated resuscitation (SimMan) teaching

Within the training programme each trainee took part in six simulated resuscitation sessions composed of 10 teaching and two assessment scenarios. Life support teaching has long been a part of emergency medicine training. The use of higher fidelity training mannequins, such as Laerdal's SimMan (Stavanger, Norway), allows more complex and demanding scenarios to be developed.<sup>9</sup> We instituted multidisciplinary teaching scenarios that allowed junior doctors and nursing staff to interact in a simulated setting. The emphasis was on initial assessment, early identification of critical illness, interpretation of clinical data, and instituting appropriate therapy. An observer with knowledge of the sessions learning outcomes evaluated the trainee's performance. The trainee was provided with immediate feedback and debrief aided by analysis of a computer based event log.

### Promoting reflective practice

A majority of junior doctor learning occurs through clinical experience and reflection on that experience. By promoting reflective practice the doctor in training is encouraged to identify and meet learning needs, accumulate meaningful

**Table 2** Clinical curriculum

| Trauma                      | Medical emergencies   | Surgical emergencies                 | Obstetrics and gynaecology  | Paediatrics                            | Other                                  |
|-----------------------------|---|--------------------------------------|-----------------------------|--|--|
| Major trauma                | Cardiovascular  | Acute abdominal pain                 | Ectopic pregnancy           | Recognition of the seriously ill child | Major incident management: an overview |
| Airway and ventilation      | ALS algorithms  | Ischaemic limbs                      | Pelvic inflammatory disease | Acute respiratory emergencies          | Prehospital care: an overview          |
| Shock                       | Chest pain  | Ophthalmology                        | Bleeding in early pregnancy | The fitting child                      |  |
| Head injury                 | Syncope   | Corneal abrasions and foreign bodies | Antepartum haemorrhage      | Non-accidental injury                  |  |
| Chest injury                | Acute coronary syndromes                                    | Blunt trauma to the eye              | Normal delivery             |  |  |
| Abdominal injury            | Cardiac arrhythmias   | Acute visual loss                    |                             |  |  |
| Spinal injury               | The swollen leg   | The painful eye                      |                             |  |  |
| Pelvic and long bone injury | Pulmonary embolus   | ENT                                  |                             |  |  |
| Maxillofacial injury        | Heart failure   | Acute hearing loss                   |                             |  |  |
| Limb injuries               | Gastrointestinal  | Foreign bodies                       |                             |  |  |
| Bone and soft tissue        | Gastrointestinal haemorrhage                                | Epistaxis                            |                             |  |  |
| History                     | Pancreatitis  |                                      |                             |  |  |
| Examination                 | Respiratory   |                                      |                             |  |  |
| Radiology                   | Dyspnoea  |                                      |                             |  |  |
| Management                  | Acute exacerbation of chronic obstructive pulmonary disease |                                      |                             |  |  |
|                             | Acute asthma  |                                      |                             |  |  |
|                             | Nervous system  |                                      |                             |  |  |
|                             | Headache  |                                      |                             |  |  |
|                             | Seizures  |                                      |                             |  |  |
|                             | Stroke  |                                      |                             |  |  |
|                             | Subarachnoid haemorrhage                                    |                                      |                             |  |  |
|                             | Toxicology  |                                      |                             |  |  |
|                             | A general approach to the poisoned patient                  |                                      |                             |  |  |
|                             | Paracetamol poisoning                                       |                                      |                             |  |  |
|                             | Tricyclic poisoning   |                                      |                             |  |  |
|                             | Endocrine   |                                      |                             |  |  |
|                             | Diabetic emergencies  |                                      |                             |  |  |
|                             | Environmental emergencies                                   |                                      |                             |  |  |
|                             | Carbon monoxide poisoning                                   |                                      |                             |  |  |
|                             | Hypothermia   |                                      |                             |  |  |
|                             | Near drowning   |                                      |                             |  |  |

evidence of relevant learning and record and monitor their professional development.<sup>1-10</sup>

### Mentoring

The introduction of a system of mentoring provided a point of contact for both trainee and trainer. Each SHO was allocated a consultant and a specialist registrar to act as mentors. Two formal meetings with both mentors were scheduled during the training programme. A checklist to monitor progress during the training post guided these meetings. Mentoring provided a forum for the early identification of problems and a mechanism by which these could be addressed.<sup>11</sup>

### SHO portfolio

As part of a NHS Education for Scotland initiative, each SHO was provided with a training portfolio, which acted as a progressive training record. This included an initial self-assessment checklist, an educational training agreement, and record of significant events, interesting cases, and educational activity. SHOs were encouraged to update this record regularly. This provided a reference for the record of in-training assessment (RITA) process and gave the junior doctor a valuable resource outlining their career progression.

### Significant event analysis, case presentation, and audit

Within our training framework significant event analysis, case presentation and audit was used to highlight learning points from clinical practice. SHOs were required to record significant events from their clinical experience, identifying the nature of the incident and contributing factors. This was used in discussion during mentor meetings to reflect on experiences and identify further training and educational

needs. During their post each SHO was required to present an interesting case as part of the teaching programme.

Each SHO was expected to participate in one of six established key departmental audits. Their involvement was supervised by their mentors and results were periodically presented at departmental meetings.

### Appraisal and assessment

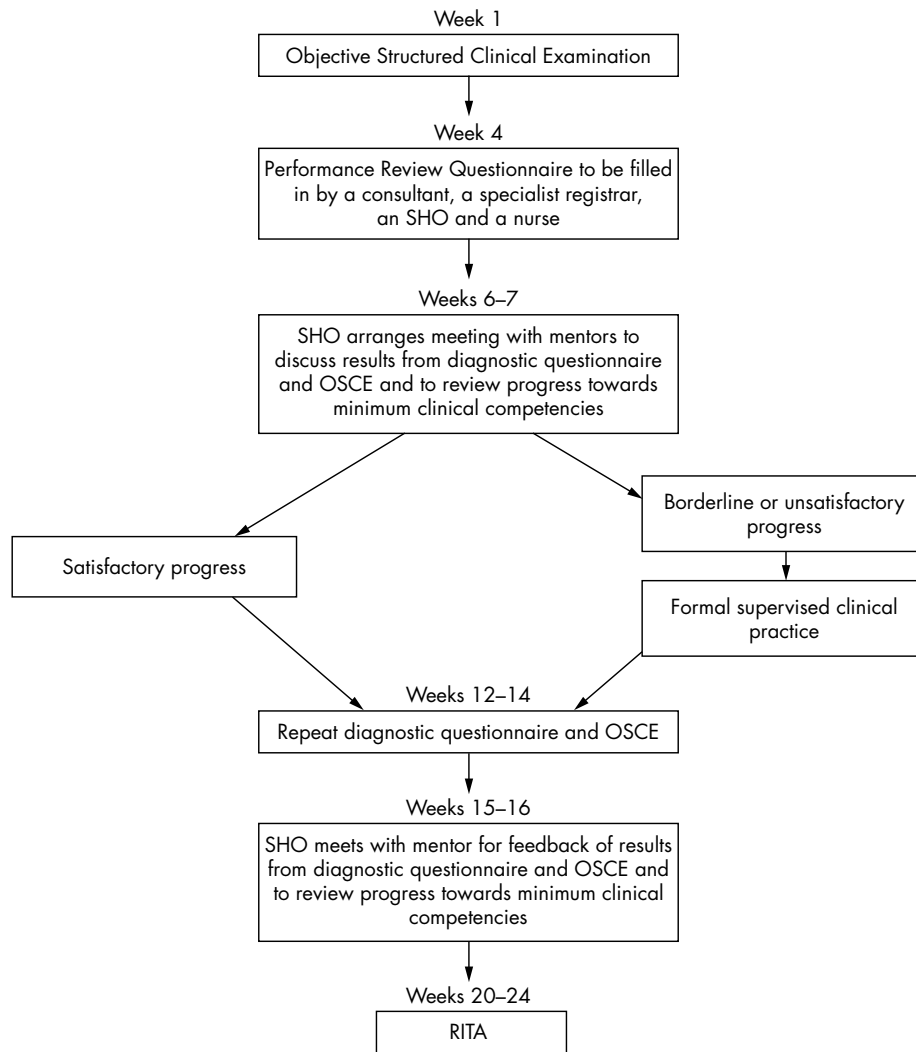
Meaningful assessment of a junior doctor's professional development during a short post was challenging. The use of a range of assessment and appraisal tools allowed the construction of an objective view of progress. The RITA framework allowed this information to be drawn together for feedback to the SHO. The assessment framework is outlined in fig 1.

### OSCE and simulated resuscitation

As SHOs commencing a post in A&E often have a varied experience base, an initial computer based OSCE was used to identify learning objectives and training needs. A second OSCE was completed at the end of the post to assess progress. In addition to this, the doctor's performance of a standardised simulated resuscitation using SimMan was assessed.

### Multisourced feedback (peer review questionnaire)

After four weeks in post each SHO was appraised by peer review questionnaires. These were completed by a consultant, specialist registrar, nurse and a fellow SHO. Results were reviewed during the first mentor meeting and the process was repeated before completion of the post. The aim was to distil as much opinion as possible regarding the doctor's performance in the workplace. Feedback allowed identification of strengths and weaknesses and provided motivation for change. Ramsey and colleagues indicated a minimum of



**Figure 1** Assessment timetable as designed for current six month senior house officer (SHO) posts. RITA, record of in-training assessment.

11 responses were required for formal assessment of a trainee.<sup>12 13</sup> In its current form the peer review questionnaire had four respondents per trainee and is used as a screening tool to identify potential problems.

This form of assessment appeared to be particularly useful at appraising “soft skills” such as communication, and multidisciplinary teamworking. It provided objective evidence that usually backed up subjective experience of a trainee’s performance. Within the department, this process had been shown to allow the early identification of problems that were then promptly addressed with a demonstrable improvement in performance.

**DISCUSSION**

The introduction of the MMC initiative challenges the traditional approach to the training of junior doctors.<sup>3</sup> The emphasis on the provision of acute care as part of the Foundation curriculum<sup>3</sup> means emergency medicine has the opportunity to develop a key role. However, as a result of shorter specialty rotations, training will need to be more structured and focused to individual training requirements.<sup>1-3</sup> In addition to this a robust system of appraisal and assessment is required to demonstrate competencies and monitor professional development.<sup>1 3</sup>

The programme described has been developed to test the competence of junior doctors in all areas detailed in *Good*

*Medical Practice*.<sup>7</sup> These include training and assessment in core clinical knowledge, core practical skills, communication skills, teamworking, reflective practice, teaching, and audit. It represents a drawing together of a number of educational initiatives currently under evaluation. It has been possible to implement this training model with minimal disruption to the working of the department but it relies on there being sufficient numbers of senior staff to supervise trainees adequately.<sup>6</sup> Meaningful appraisal can only be delivered if trainers have the necessary time and skills. It is also essential to have adequate administrative support to manage the paperwork generated by the increased amount of assessment. These are required if good quality programmes are to be developed as MMC is rolled out.

Managing poor performance has recently been highlighted as a priority for medical training.<sup>14</sup> To achieve this, specific weaknesses need to be identified at an early stage and mechanisms provided to address them. The strength of the “Dundee Model” lies in the definition of learning endpoints, a structured pathway of training, and its use of feedback from multiple sources. It tests a breadth of competencies and provides objective evidence to inform assessment of junior trainees. It was designed to conform with educational theory<sup>7</sup> in order to produce a valid programme.

Many of the principles identified in this training programme are likely to be developed at a national level.<sup>3 15</sup>

These will centre on generic competencies for Foundation doctors. It would be valuable if the specialty of Emergency Medicine could develop its own ideal model of training. This would provide trainees with a more focused experience at a point when they will spend less time within the specialty. This should meet the desire of the UK Strategy Group of MMC to see training that is trainee centred, competency assessed, serviced based, flexible, structured, and streamlined.<sup>3</sup>

#### Authors' affiliations

R J Cook, D K Pedley, S Thakore, Accident and Emergency Department, Ninewells Hospital and Medical School, Dundee, Scotland

Competing interests: none declared

#### REFERENCES

- 1 Carr S. Education of senior house officers: current challenges. *Postgrad Med J* 2003;**79**:622–6.
- 2 Calman KC, Temple JG, Naysmith R, et al. Reforming higher specialist training in the United Kingdom—a step along the continuum of medical education. *Med Educ* 1999;**33**:28–33.
- 3 Department of Health. *Modernising Medical Careers. The next step*. London: Department of Health, 2004, Available at: [www.dh.gov.uk/assetRoot/04/07/95/32/04079532.pdf](http://www.dh.gov.uk/assetRoot/04/07/95/32/04079532.pdf) (accessed 8 November 2005).
- 4 Paice E. Is the new deal compatible with good training? A survey of senior house officers. *Hosp Med* 1998;**59**:72–4.
- 5 Hurley PA, Paterson-Brown S. Senior house officer training: some myths exposed. *J R Coll Surg Edinb* 1999;**44**:324–7.
- 6 Reid C. ASME proposals for reform of SHO training: threat or opportunity for the specialty of accident and emergency? *Emerg Med J* 2002;**19**:231–3.
- 7 General Medical Council. *Good Medical Practice*. London: General Medical Council, 2001, Available at: [www.gmc-uk.org/guidance/good\\_medical\\_practice/index.asp](http://www.gmc-uk.org/guidance/good_medical_practice/index.asp) (accessed 12 November 2005).
- 8 Kolb DA. *Experiential learning—experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall, 1984.
- 9 Grenvik A, Schaefer JJ 3rd, DeVita MA, et al. ew aspects on critical care medicine training. *Curr Opin Crit Care* 2004;**10**:233–7.
- 10 Mamede S, Schmidt HG. The structure of reflective practice in medicine. *Med Educ* 2004;**38**:1302–8.
- 11 Okereke CD. Mentoring—the trainee's perspective. *Emerg Med J* 200, **17**:133–5.
- 12 Ramsey PG, Wenrich MD, Carline JD, et al. Use of peer ratings to evaluate physician performance. *JAMA* 1993;**269**:1655–60.
- 13 Ramsey P, Carline JD, Blank LL, et al. Feasibility of hospital-based use of peer ratings to evaluate the performance of practicing physicians. *Acad Med* 1996;**71**:364–70.
- 14 Irvine D. The performance of doctors. II: Maintaining good practice, protecting patients from poor performance. *BMJ* 1997;**314**:1613.
- 15 *Modernising Medical Careers—Foundation Assessment Pilot*. Available at: [www.mmc.nhs.uk/assessment](http://www.mmc.nhs.uk/assessment) (accessed 8 November 2005).

#### bmjupdates+

bmjupdates+ is a unique and free alerting service, designed to keep you up to date with the medical literature that is truly important to your practice. bmjupdates+ will alert you to important new research and will provide you with the best new evidence concerning important advances in health care, tailored to your medical interests and time demands.

#### Where does the information come from?

bmjupdates+ applies an expert critical appraisal filter to over 100 top medical journals. A panel of over 2000 physicians find the few 'must read' studies for each area of clinical interest.

Sign up to receive your tailored email alerts, searching access and more...

[www.bmjupdates.com](http://www.bmjupdates.com)