



BIROn - Birkbeck Institutional Research Online

Kilminster, S. and Zukas, Miriam and Quinton, N. and Roberts, T. (2011) Preparedness is not enough: understanding transitions as critically intensive learning periods. *Medical Education* 45 (10), pp. 1006-1015. ISSN 0308-0110.

Downloaded from: <https://eprints.bbk.ac.uk/id/eprint/5020/>

Usage Guidelines:

Please refer to usage guidelines at <https://eprints.bbk.ac.uk/policies.html>
contact lib-eprints@bbk.ac.uk.

or alternatively

Preparedness is not enough: understanding transitions as critically intensive learning periods.

Sue Kilminster, Miriam Zukas, Naomi Quinton and Trudie Roberts.

Abstract:

Objectives: Doctors make many transitions whilst they are training and throughout their ensuing careers. Despite studies showing that transitions in other high risk professions such as aviation have been linked to increased risk in the form of adverse outcomes, the effects of changes on doctors' performance and consequent implications for patient safety have been under-researched. The purpose of this project was to investigate the effects of transitions upon medical performance.

Methods: The project sought to focus on the inter-relationships between doctors and the complex work settings into which they were transitioning. To this end, a 'collective' case study of doctors was designed. Key transitions for Foundation Year and Specialist Trainee doctors were studied. Four levels of the case were examined: the regulatory and policy context; employer requirements; the clinical teams in which doctors worked; and the doctors themselves. Data collection included interviews, observations and desk-based research..

Results: We identified a number of problems with doctors' transitions that can all adversely affect performance. A) Transitions are regulated but not systematically monitored. B) Actual practice (as observed and reported) was determined much more by situational and contextual factors than by the formal (regulatory and management) frameworks. C) Trainees' and health professionals' accounts of their actual experience of work showed how performance is dependent on local learning environment. D) We found that the increased regulation of clinical activity through protocols and care pathways helps trainees' performance whilst the less regulated aspects of work such as rotas, induction and multiple transitions within rotations can impede the transition.

Conclusions: Transitions may be reframed as critically intensive learning periods (CILPs) in which doctors engage with the particularities of the setting and establish working relationships with doctors and other professionals. Institutions and wards have their own learning cultures which may or may not recognise that transitions are CILPs. The extent to which these cultures take account of transitions as CILPs will contribute to the performance of new doctors. There are therefore implications for practice, and for policy, regulation and research.

Introduction

Doctors make many transitions during their training, and continue to do so through their careers. Such transitions include the move from one place to another and one speciality to another; they also involve changes in clinical team and levels of seniority. As yet, there has been relatively little research on the effects of such transitions on doctors' performance. Furthermore, despite work showing that similar changes in professions such as aviation, fire fighting and nuclear power generation which could be classified as high-risk are associated with an increased risk of adverse

outcomesⁱ, we have yet to understand their implications for patient safety. More recently there has been some quantitative evidence that transitions can affect doctors' performance and present a risk to patients; one studyⁱⁱ has demonstrated a small but significant increase in patient mortality associated with new Foundation year 1 (F1) doctors beginning work whilst another in anaestheticsⁱⁱⁱ has shown an increase in errors associated with transitions at all levels of seniority.

Much of the relevant literature suggests that doctors are 'under-prepared' for transitions; this applies particularly to the transition from medical student to newly qualified doctor.^{iv v vi vii viii ix} New doctors are regarded as being particularly 'under-prepared' for prescribing^x although a recent study^{xi} found all grades of doctor made prescribing errors and that doctors in their second year of work after initial qualification doctors had the highest error rate (10.3%).

Medical schools have been criticised for failing to prepare students adequately for early medical practice^{xii} and medical students also believe they are not properly prepared^{xiii}. Therefore it is often argued that education providers and trusts need to improve individual doctors' 'preparedness' for practice. In this paper we will argue that our research findings and theoretical analysis, together with other education research, suggest that this emphasis on preparedness is misplaced and does not address the challenges associated with transitions. Instead, we suggest that transitions need to be fully recognised as *critically intensive learning periods* (CILPs) that are dependent on the particularities of each setting.

This paper is drawn from the research project, *Learning responsibility? Exploring doctors' transitions to new levels of medical performance* (Note 1), which was one of a series funded by the ESRC *Public Services Programme* to investigate aspects of performance and medical regulation. The overall purpose of that exploratory qualitative study was to investigate the effects of transitions upon medical performance. Our aims were to develop theoretical understandings about transitions, particularly in relation to links with medical performance, and to develop and pilot a research methodology by which to investigate transition processes. The study is therefore related to several important theoretical questions in medical education: how might doctors' learning in practice,

particularly during transitions, be theorised? How is doctors' performance in transitions understood, and how might this understanding be improved? Why do doctors continue to struggle in transition, despite considerable research on preparedness for practice? Findings about doctors' performance during transitions have already been published^{xiv xv}; the theoretical perspectives will be expanded elsewhere^{xvi}. This paper concentrates on those aspects of the study which have relevance for ideas about preparedness for practice.

Research aims and objectives

As stated, the broad aims of the research study from which this paper is derived were to develop conceptual understandings about transitions in medicine and their links to performance, and to identify implications for improving medical performance. In the original study, four research objectives were generated:

- i) To explore the regulation, management and monitoring of transitions in the study sites;
- ii) To examine the relationship between formal frameworks for managing transitions and observable and reported practice;
- iii) To investigate how performance specifically in relation to the study markers of responsibility is understood by trainees and healthcare professionals;
- iv) To investigate how performance in relation to the same markers of responsibility is understood by employers and regulatory bodies.

This paper considers the findings derived from these four research objectives which are relevant to the debate about preparedness for practice.

Methods

The project design was intended to develop and pilot a research methodology by which to investigate transition processes. The exploratory study used a combination of desk-based research,

interviews and observations to investigate key transitions. First, the research team examined the regulatory and policy context by looking at national and employer requirements. This provided background for the case study contexts and the first two levels of the study (the regulatory context and the employers). Then the team considered two further levels: the individual doctors within the study and their clinical team. These four levels formed a ‘collective’ case study^{xvii} of doctors (each doctor representing one element of the case). The case study allowed us to consider how the individual doctors related to their workplaces^{xviii}. Such case studies facilitate a deeper, multi-layered focus and theory development. We concentrated on tracking a limited number of elements over time in order to develop a richer, more dynamic and detailed analysis of transitions than had been possible hitherto.

Sampling

As doctors make transitions, their responsibilities often increase (although sometimes, they might decrease); we therefore investigated two specific points where doctors’ responsibilities for particular aspects of medical performance change (see Figure 1).

- a) The transition to the start of clinical practice –medical student to foundation training (F1).
New responsibility for prescribing.
- b) The transition from generalist to specialist clinical practice - F2 to Specialist Trainees (ST).
New responsibility for patient management.

We termed prescribing and patient management ‘markers of responsibility’.

FIGURE 1 ABOUT HERE

Participants: F1 doctors undertake three attachments, each of four months; participants included those undertaking their second and third placements. STs were selected either because they were close to the beginning of their specialist training and/or because they had recently made a geographical move. In addition we interviewed other health care professionals to increase our understanding of how others view junior doctors’ transitions (see data collection below).

Specialty: All participants were working in elderly medicine. This speciality was selected for two reasons: first, - elderly medicine involves complex patient care pathways and decision making; second, the focus on one speciality enabled us to explore how significant different local work practices and individuals were within a broadly similar overall context. This feature of the collective case study enabled the research to concentrate on the complexity of particular settings, rather than variations in clinical specialties.

Sites: The study took place in two general and four university teaching hospitals (six in all).

Access, recruitment and informed consent: The course team obtained ethical approval through the NHS Research Ethics system. The six NHS trusts involved in the study gave Research and Development approval. (Note 2). All participants gave informed consent. Recruitment was facilitated through our pre-existing links with clinicians. Initial approaches to potential participants (F1s and STs) were made through information sheets distributed at relevant training days, meetings and so on. Other health professionals were approached directly because of their role e.g. pharmacist, senior nurse etc on relevant wards in the study sites.

Data collection

Desk based research: An interdisciplinary literature review, together with reviews of protocols, policies and national and local training requirements, was undertaken. The purpose was to identify the regulation, management and monitoring of transitions in the study sites. Documentation included guidance about Foundation Training and Medical Speciality Training issued by the Department of Health, General Medical Council (GMC), PMETB (which was in existence at the beginning of this study), Postgraduate Deanery and Foundation School. The GMC's Quality Assurance of the Foundation Programme system (QAFP) published reports were also read. This provided the regulatory and policy context for the study. The review also included employers' requirements as evidenced by job descriptions and other trust policies and protocols, for eg antibiotics policies and care pathways. We asked individuals and human resources departments in

the six study hospitals who were involved in the induction of new medical personnel about the processes at their site.

Focused interviews (37): The first interview took place near the point of transition. Ten F1 doctors (9 women, 1 man) and 11 STs (7 women, 4 men) were interviewed. All participants were invited to participate in a follow-up interview between two and three months later. Two STs and 3 F1s did not participate in the second interview (Table 1). All interviews began by asking the doctors about their training and experiences to date. The interviews then focused on the participants' 'markers of responsibility' as outlined above (for F1s prescribing; for STs patient management plans and resource management). In order to explore how transitions affect performance with respect to markers of responsibility, the participants were asked to consider their work with patients with urinary tract infections and chest infections; in both cases, they were asked to discuss an instance when they had been satisfied with their work with a patient with one of these conditions and an instance where there had been some sort of difficulty. These common conditions were deliberately selected since all participants would be treating patients with them and would be expected or assumed to have certain levels of competence to do so. In the last part of the interview participants were asked to make any comments they wished. All interviews were audio recorded and transcribed fully.

Observations (11 half days): Observations were conducted at each site (Table 1). All trainees were asked if they were prepared to be observed. Ten of the 11 STs participating in the study agreed to be observed. However, only one F1 doctor consented to be observed, although all the others were agreeable to a second interview. The team believe that one reason for this could be that F1 doctors were not confident about having their performance at work evaluated by observers, even though this was not our intention. However, we were able to observe F1s indirectly during the ST observations, because they often work together. The observations focused on identifying the type of activities undertaken by the doctors and their interactions with other healthcare professionals; the observers withdrew whilst the participants were working individually with patients. Contemporaneous hand-

written field notes were made during the observations and immediately afterwards a full written description and field summary were completed and circulated to the other members of the research team.

TABLE 1 ABOUT HERE

Supplementary interviews (13): The team invited elderly care professionals from the study sites who were working with FIs and STs to participate (Table 2). The focus of these interviews was to understand the professionals' particular experiences of working with doctors new to their settings and the professionals' perceptions of doctors' transitions, within their current working contexts more generally.

TABLE 2 ABOUT HERE

All four members of the research team undertook observations, focused and supplementary interviews. In order to account for different levels of prior experience within the team and to ensure complementary approaches we undertook three training sessions together before the fieldwork began^{xix}. The purpose was to develop interview schedules, interview practice and common practice in the focus of the observations.

Analysis

Following Wolcott and other interpretative researchers^{xx xxi}, the four researchers undertook an iterative process of description, then analysis and finally interpretation. Prior to the descriptive phase, all the raw data (policies, regulations, interview transcripts, observation field notes, field summaries, protocols, ward guides, etc) were pooled. During the descriptive phase, a rich description of each of the six research sites was developed by the researchers, drawing on all the available data including observation field notes, summaries and supplementary interviews. A summary description of each participant, based on interviews, field notes and field summaries, was

drawn up by the researcher responsible for interviewing that person. These descriptions were discussed by the team and further developed as needed; together with extracts from interviews and observation notes, they then formed the basis for the next phase.

The analytical phase involved an initial focus on performance and markers of responsibility as defined in the study: prescribing for F1s and patient management for STs. The two exemplars (managing urinary tracts and chest infections) derived from the interviews were understood as the operationalisation of performance and they were analysed systematically with respect to trainees' understandings of performance and responsibility. In later iterations, the team focused on other aspects which arose from the data such as learning and cultures of learning.

The interpretative phase involved a return to the purpose of the study and to the research literature. The team collectively worked on the interpretation of the analysis in relation to the overall aims of the study, and with respect to the research questions cited above. As part of the iterative process, members of the research team presented emerging findings at practitioner and stakeholder seminars, returning to the descriptive and analytic phases as new questions opened up, and previous interpretations were challenged or expanded in the seminars. The final synthesis entailed the integration of all these phases within the conceptual frame of transitions as 'critically intensive learning periods'.

Results

In the following section, we describe the overall findings in relation to the research objectives outlined above. We summarise our findings for all four questions before proposing our interpretation of those findings in the discussion. Overall, the findings show a number of problems with doctors' transitions that can adversely affect performance.

1. Regulation, management and monitoring of transitions

i) *Regulatory context:* During the fieldwork for this study, the first year of Foundation Training (F1) came under the responsibility of the General Medical Council (GMC). Training in subsequent years was the responsibility of the Post Graduate Medical Education and Training Board (PMETB). The overall structure involved: the Modernising Medical Careers (MMC) Board who set the training national standards and core principles; PMETB who approved curricula and set criteria and standards for training; and the Royal Colleges, each of whom determined the curriculum for its speciality training. Thus four bodies – the GMC, PMETB, the Department of Health via MMC and the pertinent Royal College – regulated doctors' performance, although none set particular regulations about transitions.

ii) *Management:* There are fourteen Deaneries in England who manage and deliver postgraduate education and training. Wales, Scotland and N. Ireland each have their own national body. Whilst the NHS Trusts employ doctors, Deaneries allocate training posts to Trusts and recruit and select doctors for training programmes. The inspection of foundation posts is the responsibility of the GMC who utilise the Quality Assurance of the Foundation Programme system (QAFP). As noted above, we read those reports which were publicly available. ST posts are inspected by Deaneries and Royal Colleges. As far as induction is concerned, Foundation Training Schools and Deaneries are responsible for organising such programmes, although the content and location of these vary as does their perceived usefulness. Trusts organise employer-specific induction.

We contacted all six hospitals in the study requesting induction material provided to new doctors at the start of their rotations within the hospital. We wrote to and emailed named individuals and human resources departments (31 different contacts), following up with phone calls where we had a name, but received little back. We also asked interviewees about inductions. We interpreted both the lack of response to our enquiries and interviewees' responses as suggesting that induction processes are not systematic, and sometimes disorganised (or not organised at all).

iii) *Monitoring of transitions:* We were unable to find any trusts/employers with a policy of monitoring transitions. Health professionals and clinical teams do monitor each other's performance (for example, senior nurses reported telling junior or new doctors 'we do (not) usually do that here') although this is not systematic and is subject to many situational variables. Each trainee is required to have a clinical and an educational supervisor and all the regulatory bodies have some requirements about supervision. In practice, our participants and the QA reports and surveys report that supervision varies widely. Some supervisors do monitor transitions - in very different ways - whilst other supervisors may be largely absent and/or distant. Furthermore, all the participants reported that they could start a transitional period working on days or on nights or by being on call; consequently the monitoring they received depended on who else was around and how much responsibility they took in this respect.

The overall regulatory, management and employment context is complex but there are some explicit, identifiable, formal expectations about performance and levels at which trainees should work, activities they should (not) undertake and so on. Furthermore, all doctors have to complete work-based assessments (different for F1s and STs), which convey implicit expectations about performance. However, our participants reported that the extent to which the formal requirements and expectations operate in practice is not at all uniform, and this was evidenced through observations of trainees.

2. *Observable and reported practice and formal frameworks*

We found that doctors' reports of actual practice were sometimes at considerable variance from the practice suggested by formal frameworks. All the observation and interview data demonstrated how actual practice was dependent on setting, Trust, time of day or night, composition of the team and whether those other members of the team were present. Trainees reported that their responsibilities do not always increase incrementally as suggested in the formalised expectations about their work (i.e. in training documents and job descriptors); instead levels of responsibility

varied depending on time of day or night, who else was present or nearby and so on. Furthermore, some respondents explicitly commented on how expectations of them varied between settings and that there had been times when they were expected to undertake tasks which they considered were not their responsibility.

Doctors could begin their new rotations on days supported by consultants and other colleagues, and familiarise themselves with the culture and practices of the workplace. However, this was not guaranteed. F1D-14 (see Note 3), for example, on only her second rotation as an F1, began work when both consultants and the registrar were off, and the senior house officers (SHOs) were ill. (The term SHO was often used by participants but has been replaced by the training grade of ST.) She and a locum SHO were the only doctors on the ward, and when the SHO left later in the day, despite the formal frameworks, F1D-14 felt responsible for an entire ward of patients, with little understanding of where to seek support or help.

Practice also varies because of others' perceptions of the individual trainee – this was evident from both interview and observational data. Although allowances were initially made for new doctors, their performance was quickly judged by others and any requests made and support offered were determined by a view of the trainee's capability. Thus the extent to which doctors were able to demonstrate their ability to perform appropriately was reliant on the affordances they were given. For example, if they were viewed positively, they were likely both to have more opportunities for developing their practice and to receive support from nurses and fellow doctors when they needed help.

Observable and reported practice was therefore mainly dependent on situational and contextual factors rather than the formal frameworks.

3. Trainees' and healthcare professionals' understandings about performance

In order to elucidate understandings about performance, as explained, we were concerned with two new responsibilities: prescribing for F1s and patient management for STs. As outlined, we selected two exemplars - urinary tract and chest infections - because all participants would treat patients with these conditions and be expected to have certain levels of competence to do so at the beginning of a transition. For brevity we will focus on F1s and prescribing here.

As noted earlier on, F1 doctors' prescribing has been considered a matter of concern in a number of studies. However, within the interviews conducted with both trainees and health professionals, although F1s found prescribing to be particularly challenging at first, it appears that two factors seem to mitigate many of the difficulties noted in earlier studies: the introduction of drug protocols – particularly for antibiotics; and closer working with pharmacists and microbiologists. F1 doctors reported that they often sought advice from pharmacists and nurses as well as other doctors, and that it was easy so to do. Other healthcare professionals also thought that, although prescribing was challenging for F1s, they were more likely now to seek advice from others if they were not sure, than would have happened in the past. F1s and the other professionals considered that doctors learnt about prescribing through practice:

“I know the drug doses of most common drugs now [be]cause I kind of come across the same ones again and again ...” (F1D-12)

Even though F1 doctors were more likely to ask for help, sometimes the boundaries between professions meant that the pedagogic function had to be negotiated rather delicately:

“I think we teach them what drugs we like to use in our areas ... we just kind of say well we normally use this but we can go with that one if you like and they'll go 'oh no it's alright we'll do this one' ...” (Senior Sister).

In addition to learning about prescribing from protocols and from others, doctors also had to learn about the preferences of particular consultants, even if these did not fit with the protocols they had just learnt. One of our participants, F1D-2, told us that, after drawing on her knowledge of

therapeutics, she had taken a complex prescribing decision with which she was happy. However, she then told us:

“Yeah, whereas if it had been the other consultant I would probably have started antibiotics.... Because he is for antibiotics so it just depends on who the consultant is, you have to know who you are working for.” (F1D-2)

This demonstrates how prescribing protocols and evidence-based medicine do not always determine doctors’ performance. Sometimes a particular consultant’s preferences carry more weight than formal regulation. We termed this contingent performance. There were many examples of such contingent performance in relation to STs’ patient management as well.

4. Employers’ and regulatory bodies’ understandings about performance

Broad statements about expected performance are contained in relevant GMC and speciality training guidance, assessments and documentation. Job descriptions indicate expectations for particular posts. Other requirements about confidentiality, including the Caldicott guidelines (1997) and Data Protection Act (1998), contain injunctions not to share security passes and computer passwords. Prescribing protocols and care pathways also give indications about expectations of performance.

However, the participants reported that organisational issues meant that trainees often had to ignore rules. In this study, there was considerable observation as well as interview evidence that doctors’ routine work was frequently hampered because they had not yet been provided with computer passwords or security passes. In order to operate at all, trainees had to ‘borrow’ colleagues’ passes to gain access to wards when on call, and colleagues’ passwords to access test results. Such infractions of formal guidance were very common.

Infractions occurred frequently. For example, there is a requirement on employers that:

‘The duties, working hours and supervision of trainees must be consistent with the delivery of high quality safe patient care.’^{xxii}

However study participants reported that it was not unusual for trainees to begin a rotation in a new hospital on nights with little experienced supervision available. Again, this was also observed. In practice, there was an expectation that trainees would - and should - manage and do what is necessary even when this is not in line with explicit formal expectations for their level of training.

Discussion

In summary, we found that transitions are regulated but not systematically monitored. Actual practice (as observed and reported) was determined much more by situational and contextual factors than by the formal (regulatory and management) frameworks. Trainees and health professionals' accounts of performance showed how it is dependent on the specifics of a particular setting. We found that the increased regulation of clinical activity through protocols and care pathways helps trainees' performance whilst the less regulated aspects of work such as rotas, induction and multiple transitions within rotations makes it more difficult. Despite critiques of protocols as limiting professional autonomy, prescribing protocols in particular appear to be supporting professional practice and are accepted as part of practice. These protocols ensure that trainees are encouraged and enabled to ask for help from a whole range of professionals; furthermore their performance is monitored and they get feedback from others.

It is assumed and expected that trainee doctors, before a transition, need to be filled up with knowledge and skills so that they are 'oven ready and self basting'^{xxiii}. However, we have shown how performance is not just an individual attribute but is fundamentally affected by organisational practices, activity and cultures. Non-clinical aspects such as the organisation of staffing and rotas might impede doctors' performance. And doctors' responsibilities (and therefore performance) do not necessarily remain stable within each transition – the demands will depend on a wide range of factors including who else is on duty and present, the speciality and its specific practices, trust policies and so on. Across transitions, responsibility might reduce as well as increase, depending on speciality. Thus, whilst performance (and responsibility) tends to be

understood as an individual attribute or a set of skills which exists independently and is possessed or acquired, our work has shown that performance is situated and relational – that is, performance can only occur in the interface between the doctor and the work itself in a specific setting (for a graphic representation of this see Figure 2). Therefore doctors can never be fully prepared in advance of a transition because learning, practice and performance are inseparable, each depending on the other.

INSERT FIGURE 2 ABOUT HERE

There are two theoretical problems with current ideas about ‘preparedness’. The first is that ‘preparedness’ is dependent on the notion of transfer of learning – the basic assumption is that doctors are prepared for practice by their learning in medical schools (and other non-clinical settings) and that doctors will transfer this learning to each particular practice setting. However, researchers have consistently failed to find empirical evidence of learning transfer^{xxiv xxv xxvi xxvii}. Therefore many researchers now build on theoretical understandings that learning is situated (specific to and dependent upon context) and of necessity entails authentic practice in a community^{xxviii xxix}. Consequently the focus of inquiry moves towards investigating learning in specific work environments^{xxx xxxi} as with the basis for our approach which was to focus on the ways in which medical staff learn to fit in with the culture and working practices of their new location or role^{xxxii}.

The second problem is that current practices and ideas about preparedness separate individuals from the social relationships/contexts/ practices in which they learn. But, as we have shown, learning, work practices and performance are not separate; they are each influenced by divisions of labour within the specific workplace setting, institutional and organisational cultures, protocols of one kind and another and even patients and specialities. Clearly, each individual’s pre-existing knowledge, values and skills are very important but our argument is that what individuals

already know is only a part of what is needed for effective performance as a new professional and/or in a new location.

Conclusions

These theoretical proposals, drawn from the interpretation of our study, need testing further. We recognise that this was an exploratory focused collective case study, in one speciality; it will be necessary to investigate transitions in other specialties, levels of responsibility and settings. Further, because so few F1s were unwilling to be observed, we had to rely on their accounts and the accounts of other professionals who worked with them. It could be that more understanding of the transition as a CILP existed in practice for F1s than for STs and resulted in better transitional support, but the current focus on preparedness, together with the accounts, suggests otherwise. Finally, a qualitative study such as this one relies on our interpretations of a complex data set, which might be significantly awry. However, our methodology required that we present emerging findings to practitioners and to stakeholders and, with their feedback, revisit our descriptions, analysis and interpretations in an iterative process. This has strengthened our claim below.

Our findings demonstrate that practice, performance and learning are so interlinked they are inseparable and dependent on the specific setting. Consequently doctors cannot be fully prepared for a transition. We therefore propose that transitions should be recognised as *critically intensive learning periods* (CILPs) in which doctors engage with the particularities of the setting and establish working relationships with doctors and other professionals. Institutions and wards have their own learning cultures which may or may not recognise that transitions are CILPs. The extent to which these cultures take account of transitions as CILPs will contribute to the performance of new doctors. The recognition of the significance of CILPs in doctors' transitions would, therefore, have major implications for individuals, clinical teams, employers and regulatory bodies and require changes in practice.

Notes

1. This study (ESRC RES-153-25-0084) was funded by the Public Services Programme of the ESRC.
2. Ethical approval was obtained from Leeds East REC (07/H1306/102) and the necessary R and D approvals were obtained from the six participating NHS trusts.
3. Each F1 doctor was allocated a code F1D to indicate their level and then an individual number.

References

-
- ⁱ Donaldson, L. (2006) *Good doctors, safer patients*. London: Department of Health.
- ⁱⁱ Jen MH; Bottle A; Majeed A; Bell D and Aylin P. 2009 Early in-hospital mortality following trainee doctor's first day at work. *PLoS ONE* 4(9); e7103 doi:10.1371/journal.pone.0007103
- ⁱⁱⁱ Haller G, Myles PS, Taffé P, Perneger TV, Wu CL. (2009) Rate of undesirable events at beginning of academic year: retrospective cohort study. *BMJ* 2009;339:b3974. (13 October.)
- ^{iv} Lempp, H., Cochrane, M., Seabrook M. and Rees J. (2004) Impact of educational preparation on medical students in transition from final year to PRHO year: a qualitative evaluation of final-year training following the introduction of a new year 5 curriculum in a London medical school, *Medical Teacher* 26 (3): 276-8.
- ^v Lempp, H., Seabrook, M., Cochrane M. and Rees J. (2005) The transition from medical student to doctor: perceptions of final year students and preregistration house officers related to expected learning outcomes, *International Journal of Clinical Practice* 59 (3): 324-9.
- ^{vi} Illing, J., Morrow, G., Kergon, C., Burford, B., Peile, E., Davies, C., Baldauf, B., Allen, M., Johnson, N., Morrison, J., Donaldson, M., Whitelaw, M. and Field, M. (2008) *How prepared are medical graduates to begin practice? A comparison of three diverse UK medical schools: final summary and conclusions for the GMC Education Committee*. London: General Medical Council.
- ^{vii} Nikendei, C.B. Kraus B. Schrauth M. Briem S. and Junger J. (2008) Ward rounds: how prepared are future doctors?, *Medical Teacher* 30.(1): 88-91.
- ^{viii} Matheson, C. and Matheson, D. (2009) How well prepared are medical students for their first year as doctors? The views of consultants and specialist registrars in two teaching hospitals *Postgraduate Medical Journal* 85:582-589.
- ^{ix} Cave, J. Woolf, K. Jones, A. and Dacre, J. (2009) Easing the transition from student to doctor: How can medical schools prepare their graduates for starting work? *Medical Teacher*
- ^x Heaton, A. Webb, DJ. and Maxwell, SRJ. (2008) Undergraduate preparedness for prescribing: the views of 2413 UK medical students and recent graduates. *British Journal of Clinical Pharmacology* 66(1):128-34
- ^{xi} Dornan, T. Ashcroft, D. Heathfield, H. Lewis, P. Miles, J Taylor, D. Tully, M. and Wass, V. (2009) *An in depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. EQUIP study*. [accessed 9th June 2010] Available from http://www.gmc-uk.org/about/research/research_commissioned_4.asp

-
- ^{xii} Devlin, K. 2009 Medical graduates ‘poorly prepared to become medical graduates’. [Accessed 29.6.10] available from <http://www.telegraph.co.uk/health/healthnews/6531332/Medical-graduates-poorly-prepared-to-become-hospital-doctors.html>
- ^{xiii} Goldacre, MJ. Davidson, JM. and Lambert, TW. (2008) The first house officer year: views of graduate and non-graduate entrants to medical school *Medical Education* 42(3): 286–293
- ^{xiv} Roberts, Trudie (2009). Learning responsibility? Exploring doctors' transitions to new levels of medical responsibility: Full Research Report ESRC End of Award Report, RES-153-25-0084. Swindon: ESRC
- ^{xv} Kilminster S. Zukas M. Quinton N and Roberts TE (2010) Learning practice? Exploring the links between transitions and medical performance. *Journal of Health Organisation and Management*
- ^{xvi} Zukas, M. and Kilminster, S. (forthcoming) Learning to practise, practising to learn: doctors’ transitions to new levels of responsibility. In P. Hager, A. Lee & A. Reich (eds) *Practice, Learning and Change: practice-theory perspectives on professional education*. Springer.
- ^{xvii} Stake, R.E. (2005) “Qualitative case studies” in N.K. Denzin & Y.S. Lincoln (eds) *The Sage Handbook of Qualitative Research: Third Edition*. London: Sage.
- ^{xviii} Hodkinson, P., Biesta, G., and James, D. (2008) Understanding learning culturally; overcoming the dualism between social and individual views of learning, *Vocations and Learning* 1 (1): 27-47.
- ^{xix} Roberts, TE. Kilminster, S. Quinton ND. and Zukas, M. 2009 Developing qualitative research in medical education: a focus on using observation as a research tool in clinical settings AMEE Conference. Malaga, Spain.
- ^{xx} Moustakas, C (1990) *Heuristic research: design, methodology and applications*. London: Sage.
- ^{xxi} Wolcott, H. F. (1994) *Transforming qualitative data: description, analysis and interpretation*. Thousand Oaks, CA: Sage.
- ^{xxii} General Medical Council and Post Graduate Medical Education and Training Board. (2007) *Standards for Training for the Foundation Programme* . [Accessed 16th April 2009] Available from <<http://www.gmc-uk.org/education/documents>>
- ^{xxiii} Atkins, MJ. (1999) Oven ready and self basting. Taking stock of employability skills. *Teaching in Higher Education*. 4(2):267-80
- ^{xxiv} Bransford, J.D. and Schwartz, D. L. (1999) Rethinking transfer: a simple proposal with multiple implications, *Review of Research in Education*, 24, 61-100.
- ^{xxv} Haskell, R.E. (2001) *Transfer of Learning: cognition, instruction and reasoning*, San Diego: Academic Press.
- ^{xxvi} Colliver, J.A. (2004) Full curriculum interventions and small-scale studies of transfer: implications for psychology type theory, *Medical Education* 38 (12): 1212-4.
- ^{xxvii} Norman, G. (2005) Research in clinical reasoning: past history and current trends, *Medical Education*, 39 (4): 418-27.
- ^{xxviii} Lave & Wenger (1991) *Situated learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

^{xxxix} Engestrom, Y. (2001) “Expansive learning at work: toward an activity theory reconceptualisation”, *Journal of Education and Work* 14(1): 133-56.

^{xxx} Bleakley, A. (2005) “Stories as data, data as stories: making sense of narrative inquiry in clinical education”, *Medical Education* 39(5): 534-540.

^{xxxii} Dornan T. Scherpbier A. King N. and Boshuizen H. (2005) Clinical teachers and problem-based learning: a phenomenological study, *Medical Education* 39 (2): 163-70.

^{xxxiii} Hager P. and Hodkinson P. (2009) Moving beyond the metaphor of transfer of learning. *British Educational Research Journal*, 35(4):619-638.

Table 1 Interviews and observations of doctors in transition

| | Initial responses to invitation | First interview | Observation of practice | Second interview |
|------------|--|------------------------|--------------------------------|-------------------------|
| F1 doctors | 14 | 10 | 1 | 7 |
| ST doctors | 19 | 11 | 10 | 9 |

Table 2 Supplementary interviews

| Profession | Number |
|------------------------|---------------|
| Consultant | 5 |
| Sister/ward nurse | 3 |
| Pharmacist | 4 |
| Occupational therapist | 1 |

