"There is a chain of Chinese whispers ...": empirical data support the call to formally teach handover to prequalification doctors

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“There is a chain of Chinese whispers …”: empirical data support the call to formally teach handover to prequalification doctors

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ABSTRACT

Background: Changing patterns of work in the hospital setting mean different teams look after the same group of patients over the course of any given day. Shift handovers, or hand/sign-off, can give rise to miscommunication of critical information, a patient safety issue. How can we best prepare new doctors for handover?

Methods: This was a qualitative, focus-group study, exploring the views of doctors (Foundation Year, Senior House Officers, Registrars and Consultants) and night nurse practitioners, in Aberdeen, UK.

Results: Five focus groups were carried out with 21 participants. Using framework analysis, five main themes relevant to the task of effectively handing over, and how to best teach handover, emerged. These were: definition of handover; experience of handover as a junior doctor; perceptions of junior doctors’ handover skills and attitudes; systems factors, and their interaction with individual factors; and the “what” and the “how” of teaching handover.

Conclusions: New doctors feel unprepared for handover and are seen as poor at handing over. Certain skills are required for effective handover, but professional attitudes are also critical. The skills identified reflect those suggested in policy documents based on expert panel views. Poor systems are a barrier to effective learning and practice. Our empirical approach adds to existing knowledge by high-lighting that handover is not solely a skills-based task; there are complex interactions between individual and systems factors; and junior doctors should be prepared for handover prequalification. These data can be used to plan optimal handover teaching for medical students.

Handover, hand-off or sign-off in healthcare may be defined as: “The transfer of professional responsibility and accountability for some or all aspects of the care of a patient, or group of patients, to another person or professional group on a temporary or permanent basis.” Handover may be between shifts, between units, between secondary and primary care, or between different healthcare professions. Changing medical work patterns due to the European Working Time Directive (EWTD) or Accreditation Council for Graduate Medical Education (ACGME) duty hour restrictions mean that different teams of doctors now also look after the same group of patients over the course of any given day.

Evidence from other industries running continuous operations shows that the discontinuity of tasks and personnel which accompanies shift-working, can give rise to non-transmission or miscommunication of critical information. This can, in turn, lead to major incidents such as Piper Alpha, to date the world’s worst offshore oil disaster in terms both of lives lost and impact to industry. Analysis of the Piper Alpha incident indicated that poor handover notes were a key causal factor.

Given these changes in medical working patterns, what we know from other industries, and their implications for patient safety, there has been a surge of interest in improving healthcare handover practices. Several bodies, including the Joint Commission National Patient Safety Goal, the World Health Organization High Five Initiative, the Australian Council for Safety and Quality in Healthcare and the Junior Doctors Committee of the British Medical Association, have published recommendations for optimal handover performance based on expert opinion. Unfortunately, there is evidence that these suggested standards for medical handovers are generally not met. Furthermore, US observational work indicates that the patient information communicated during medical handovers is inadequate for the task and this has been implicated in fatal delays and inappropriate patient care.

Handover at shift changes frequently falls to doctors in training due to the nature of their working hours and responsibilities. Handover standards may thus be improved by ensuring that skills are taught prequalification, at medical school. However, there are few reported studies of teaching handover to medical students. Only 8% of US medical schools formally teach handover (“hand-off” or “sign-out”), and anecdotal evidence suggests this probably reflects UK practice. Thus, most newly qualified doctors are handing over patients with no training in how to do so. This means that new doctors must both acquire knowledge of handover and employ this knowledge immediately, without time to think or reflect—which is unlikely to lead to effective learning.

However, empirical data to inform the content of teaching handover are lacking. Our study aimed to answer the research question: how can we best prepare new doctors to handover effectively?

METHODS

In the absence of prior UK empirical work, we selected qualitative methodology to help identify the issues which need to be addressed to achieve effective handover practice, and how to deliver teaching for optimal handover. We chose focus groups, as these are able to generate data regarding perceptions and beliefs but can also be particularly useful, as the group setting can make people more...
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confident in sharing information. Further, focus groups allow participants to ensure that the topics under discussion are directed by participants themselves, not just by researchers’ agendas.

**Participants**
All Foundation Year 2 (FY2), Senior House Officers (SHO) and Specialist Registrar (SpR: senior trainees) doctors working in Aberdeen Royal Infirmary (ARI), a large teaching hospital, in March 2007 were invited to take part in the study via an email circular from NHS Education for Scotland. Consultants who coordinate teaching for medical students and night nurse practitioners (ARI) were also invited to take part, as we felt their views would be useful given that doctors in training do not work in isolation. The dates and times of the focus groups were set in advance of the invitation going out, timed for the end of day shifts/immediately before night shifts for ease of participation. Those who expressed interest in the study were then contacted by the researchers.

Of relevance is the structure of teams in the UK. Intershift handovers involve, where possible depending on clinical demands and unit working patterns, the whole team of trainee staff, from senior trainees nearing Consultant status to Foundation Year 1 doctors (in their first year of work postqualification). Consultants may be involved depending on the working patterns of the specific unit. Trainee doctors’ hours are governed by the European Working Time Directive (EWTD) of 56 h per week at the time of writing.

Ethics permission for this study was granted by the North of Scotland Research Ethics Committee. Written informed consent for data collection and publication of anonymised data was obtained from all participants. Participants were provided with a certificate of participation.

**DATA COLLECTION**
Five focus groups were carried out between March and June 2007. Participants were assigned to focus groups by grade/profession to encourage open discussion. All focus groups were carried out in ARI.

The same semistructured discussion guide was used for all groups. This was developed through a literature review followed by stakeholder (members of the local undergraduate medical degree management team and the Postgraduate Deanship) consensus. The topics covered included definitions of good and bad handover practice, what factors influence handover, what are the skills and abilities needed to carry out a good handover, can these be taught and, if so, how. The focus-group discussions were led by JC, who has experience in qualitative, focus-group research, and cofacilitated by at least one other author, all of whom have clinical experience of handover.

**ANALYSIS**
All focus groups were taped and transcribed verbatim, and anonymised. The transcripts were analysed inductively, using framework analysis, during which we determined content-related themes (what participants said). Framework analysis was used to classify and organise the data according to key themes (main and subthemes), concepts and emergent categories, which were used to examine the data for patterns and connections. Process-related themes such as the use of language and humour were not analysed.

Focus-group transcripts were initially analysed independently by each author who developed categories or themes as they emerged from the data. All authors then met to discuss and examine these independent analyses using the constant comparative method, where items were compared and contrasted, and themes negotiated and checked to establish analytical categories, or the ‘fit’ between items, and to group data into categories and subcategories. The data were analysed using a paper (rather than a software) system.

**RESULTS**
Seventeen doctors and four night nurse practitioners (NNPs) took part (n = 21). One focus group was held with consultants (n = 5), one with SpRs (n = 5), one with Foundation Year 2 (FY2)—previously called Senior House Officers—doctors (n = 5), one with NNPs (n = 4) and one with a mixed group of Foundation Year 1 (FY1)—previously called Pre-registration House Officers—FY2 and SHO doctors (n = 6).

Six (55%) male and 11 (65%) female doctors took part. All NNPs were female. Surgical and medical specialties were represented in the doctors who took part. All participants had clinical experience of handover in different hospital environments (eg, surgical and medical wards), in different hospitals (ie, their experience was not limited to just ARI), and had had been involved in handovers with, and/or as, new doctors. Only nurse participants had received formal training in how to handover. Consultants tended not to be involved in daily intershift handovers, which were usually registrar-led.

The focus-group discussions ranged from 40 to 65 min in length. Five main themes relevant to the task of effectively handing over, and how to best teach handover, emerged. These are set out below.

**Definition of handover**
Handovers were defined as an exchange of relevant information, informing the next shift of necessary tasks and logistical information, transferring responsibility, prioritising and highlighting particularly unwell patients, and ensuring continuity of care. Junior doctors (FY2 and SHO) provided definitions that were task-focused compared with consultants and nurses, who talked about transfer of responsibility (box 1).

**Experience of handover as a junior doctor**
Junior doctors described their early experiences of handover negatively, as very stressful due to not knowing the environment, the patients, what was expected of them, and feeling overwhelmed by the amount of information given to them and how this was given (usually orally—see Systems factors later). Junior doctors felt they were not being provided with sufficient information about individual patient circumstances or which patients to prioritise, and this lack of a bigger picture could be stressful particularly when patients became unwell. Structured handovers (in terms of a set time and place) where at least some patient information was available in writing were strongly preferred (see box 2 and Systems factors later).

**Box 1 Definition of handover**
A handover is the exchange, it is where care, responsibility for care and all of the requisite information that goes with it is passed between either individuals or teams.—Consultants

Letting the next shift know about patients that are going to cause trouble, anything, any jobs that need done, the patients that are under your care.—Mixed FY group
Box 2 Experience of handover as a junior doctor

It’s just kind of flung at you and you know, people don’t wait their turn and you know that doesn’t help, you know, and you’ve got someone from the infection unit going nah, nah, nah, and someone from Chest giving you information and someone from…. and then you end up with this enormous list, and you’ve no idea where any of these patients are.—FY1s

I remember being really stressed during the night you know because it would have been, it would have been really useful to have had that information before hand.—FY1s

A: I think the better ones tended to be in xx when I was over there in that it was in the doctors’ room and you had your boards with the patients there ….

B: Aye, most good handovers are just well structured, you know, you are in a room at a certain time, and you all have to attend, and everyone knows what their role is, and who does what you know, whereas the bad ones tend to be very much ad hoc, it’s just whoever turns up and whenever you get finished, be it six or seven to let somebody know before you head on, you know, that’s very, em, that’s not, it leads to problems.—Mixed FY group

Junior doctors’ handover skills and attitudes

The data indicated that junior doctors had a relatively good grasp of the skills and knowledge required for effective handover (box 3). Participants proposed, with ease, the skills they saw as essential to effective handover. These included communication skills: active listening, not interrupting, introducing yourself, questioning (those who were handing over), team working/ responsibility and communicating concisely. Communicating relevant information concisely was discussed in every focus group. Other important skills were prioritisation (identifying what was important information to handover), advance preparation of information to handover (to aid effectiveness) and having the skills, and confidence, to present information to many people. Prioritisation was reported as particularly important due to the quantity of information/patients being handed over.

However, there seemed to be difficulties putting these skills into practice. More senior doctors and nurses were critical of new doctors’ handover skills. They discussed that junior doctors often found it difficult to know what information was relevant and lacked professionalism (in terms of responsibility to colleagues to hand over the information required to provide the best care for patients) (box 4).

While more senior staff and nurses were aware that new doctors struggled with the complexity of handover, there seemed to be the view that handover skills were expected to develop “on the job” through experience and observation/role modelling. There was the view that the further a doctor progressed in training, the more they were able to prioritise and communicate critical information. However, in contrast, the data also suggested that experience and observation were not necessarily reliable methods of learning skills (box 3).

Systems factors

As stated above, the data indicated that junior doctors were aware of the skills required for effective handover (box 3), but not using these skills, or developing them further “on the job” seemed, in great part, linked to workplace or systems factors such as poorly structured handovers, large numbers of patients and no protected time for handing over. The latter meant that critical team members did not always attend handovers, or did not attend the whole session, due to workplace demands. Handovers could be chaotic and ad hoc, and lack obvious leadership. While feeling responsible for patients was seen as a positive factor which encouraged good handover, this was unsupported by shift working patterns. These systems issues seemed to be direct barriers to improving practice (box 5) and could be demoralising in terms of acting as barriers to change.

Teaching handover

All participants supported the concept of formal, teaching on handover before commencing work as a doctor. Participants proposed the skills they saw as essential to effective handover

Box 3 Junior doctors’ handover skills

<table>
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<th>Awareness of skills required</th>
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<tbody>
<tr>
<td>I think being able to prioritise, both the person who is handing over and the person who is being handed over to, to be able to prioritise what’s important, you know, what’s not important, what actually could wait till the morning.—FYs</td>
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<td>You’ve got your list, which has everybody’s name on it and what’s wrong with them, much more than they would actually verbally handover to you, gives you a bit of background, so you know when you are called to chest in the middle of the night, you’ve got your three sentences, which is, gives you something to go on when you get there.—Mixed FY group</td>
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<th>Lack of skills use in practice</th>
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<td>People are very poor at identifying who they are as well, when they come in the door they just say blah, blah, blah, they don’t say what they are, a house officer or a SHO, who ward they are from ….—SpRs</td>
</tr>
<tr>
<td>I think he had one person to handover and he took about half an hour for this one patient.—Night Nurse Practitioners</td>
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<th>Learning “on the job”</th>
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<tr>
<td>It improves a tiny bit throughout the year so it probably improves by about five percent, but in the beginning it’s not good …—Night Nurse Practitioners</td>
</tr>
<tr>
<td>Dr1: I think the JHOs (FY2 doctors) are just so overwhelmed with trying not to kill anyone…</td>
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<tr>
<td>Dr2: And trying to stay alive themselves ….</td>
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<tr>
<td>Dr1: … and trying to stay alive themselves, it’s difficult, whereas the SHOs are usually calmer on nights they know what to expect—SpRs</td>
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Box 4 Lack of professional attitudes

They seem to treat it as a chore … in fact there was one doctor who didn’t even turn up one night, and that sort of sticks in my mind, the night before he had literally turned up, handed the bleep over and walked out, he never said a word, and the next night he didn’t even turn up …—Night Nurse Practitioners

(see earlier). All groups discussed how handover should be written as well as oral (box 6).

Suggestions for teaching methods included simulated handovers and exercises to develop the skills necessary for effective handover. Using real clinical information was seen as important. Participants emphasised that teaching simulations should reflect real life practice (eg, handing over many patients, handover in an imperfect environment) to be transferable to the work environment on qualification.

Encouraging clinical staff to communicate the importance of handover and to role model effective handover was also seen as important, as was providing opportunities for undergraduate medical students to observe a handover. Reflection on simulated or observed handovers was also considered an important learning tool.

DISCUSSION

We have identified that new doctors have a narrow definition of handover (hand-off or sign-off), focusing on tasks which require completion by the end of the shift. New doctors have insight into the skills and attitudes needed for safe and effective handover but the reality of handing over multiple patients under difficult circumstances (eg, no protected handover time) results in a task focus and stressful early experiences of handover. New doctors came to handover with no specific training and thus were unprepared in terms of having a basis for building skills. Experienced medical and nursing staff seemed to believe that new doctors would learn handover on the job, but evidence of this was lacking. Rather, workplace demands and poor systems precluded the use of the clinical handover as a teaching and learning opportunity.

While the skills and organisational factors identified in this study support those suggested in policy documents based on expert panel views, our empirical approach adds to existing knowledge in two ways. First, it emphasises the necessity of teaching handover first in the undergraduate curriculum as a means of preparing new doctors for the workplace. Second, in terms of highlighting that handover is not just about skills: medical students must also be encouraged to reflect on the role of professional attitudes in effective handover. It also seems clear from these data that new doctors need to be aware of the systems in which they will work and the difficulties these may involve for handover.

With reference to cognitive learning theory, providing opportunities to learn how to handover before handing over in a clinical environment will support the development of “readiness to learn” and provide students with the scaffolding required to continue their learning “on the job” or in context more effectively. Teaching should focus on supporting learners in the purpose as well as the skills of handover. Simulated handover situations, designed to mimic the complexity of real clinical situations and systems, could help learners apply their knowledge to problems (eg, many sick patients to handover) and barriers (eg, an unstructured handover), and work out how to cope with the problem.

It is clear from the present study, and the wider literature, that training is only one aspect of improving handover: systems issues such as protected time for handover and the use of structured handover tools must also be in place. Designing and implementing effective handover systems must be given high priority by healthcare organisations. For example, if it is expected that trainee doctors should learn handover skills “on the job,” then a system for providing timely and constructive feedback on their contribution to handover must be instituted.

An obvious strength of this study is that we included doctors at every stage of training, as well as consultants and night nurse practitioners, in the data collection in order to assess the differing expectations of junior trainee doctor handover. The skills mix of the authors meant that each focus group was co-facilitated by people with experience and knowledge of running focus groups and clinical medicine, thus enabling more in-depth discussion than may have been achieved if facilitation had been carried out solely by a non-medical researcher. Furthermore, initial, independent data analysis by medical and non-medical researchers provided different perspectives on some data, then discussed fully before final themes and subthemes were agreed, thus leading to a more robust analysis. One potential weakness of this study is that the data were collected in one geographical locality and one, very large, teaching hospital. However, all our participants had experience of studying or working in other hospitals, and their discussion was not limited to local or current experiences. The small number of participants in some focus groups could be seen as limiting the discussion and hence the information gathered.

Box 5 Systems factors

If you are the SpR, you are the most senior person, you have some opportunity to run the thing, but I tended to find, that even if, you know, that I would arrive, things were already happening, people will still come and go and you lose heart in trying to do anything at all.—SpRs

That is that it’s not just the night issue, it’s the thing you discover on a Sunday that should have been passed on on a Friday evening handover or the fact that actually there is a chain of Chinese whispers between the person who was on at five o’clock on a Friday and you were there at nine o’clock on a Sunday.—SpRs

Interplay between systems and individual factors

I agree that there are certain skills like prioritisation skills, you could test out with a list of tasks, which you would hand over, or which would you not, or which would, you know, save for the morning and do you yourself again the next day, as a kind of a teaching aid, just as an idea of what you are left with at the end of the day and what you have to give people for the night and what you can leave till the morning. I’m sure there is plenty of things you could do with that, but structure again, I think, it’s not something you can change as an FY1 if you come straight in and if you are in a ward with a bad handover, you can’t just say right, (BANG), that’s it, I did my training on handover and we are tearing down this whole system and I’m going to start a new one, you know, you can’t do it.—Mixed FY group
However, group members had worked or trained together, and seemed comfortable discussing their views and experiences. Finally, the focus of this study was on how we can best prepare new doctors for handover. This focus limited exploration of the systems that training could not address (but which seemed extant in the participant responses).

This study has research implications. Qualitative research does not stake a claim to generalisation in the way quantitative research does. Thus, replicating this study in diverse locations would be helpful in terms of illuminating the generalisability of the findings. However, future qualitative work may wish to take a balanced approach to discussion which allows full exploration of both training and systems as potential influences on handover. Supplementing focus groups with individual interviews to target any groups felt to be under-represented may also be beneficial. Longitudinal studies are required to identify if teaching has an impact on actual practice rather than simulated practice, and to explore further the interaction between individual and systems factors. Given that stress at work has been consistently related to lack of control of the working environment, as seems to be the case with new doctors and handover, a study exploring levels of stress associated with different levels of preparedness for handover may also be timely.

In conclusion, the results of this study will inform the development of optimal teaching of handover, based on learning theory, aimed at helping medical students handover more effectively when they start working as doctors. However, training must be considered with respect to the human as part of the healthcare delivery system: training new doctors for handover will not be effective if this is in isolation from implementing robust systems for handover.

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