Prepared for Practice? Interns’ Experiences of Undergraduate Clinical Skills Training in Ireland

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ABSTRACT

BACKGROUND: Many previous studies on internship have reported a lack of preparedness for the role. More recently in Ireland, medical schools have introduced formal clinical skills training programmes. This study sought to evaluate the impact, if any, of formal skills training in the medical training on intern’s preparedness for practice.

METHODS: The study utilized a survey approach followed by focus group discussions. The aim was to identify the skills that were taught and assessed in medical training and the skills that were actually required in their intern year.

RESULTS: Most interns had received skills training in designated skills laboratories. No intern had received training in all skills advised in the European guidelines. Skills taught to all interns were intravenous cannulation, basic life support, and basic suture. Skills required from all interns were intravenous cannulation, phlebotomy, and arterial blood sampling. Removal of peripherally inserted central line (PICC) lines, central lines, and chest drains were commonly requested but not taught. Senior staff underestimated skill abilities and expected failure.

CONCLUSION: These findings identify a discordance between the skills taught and the skills required in the job. There is a need for standardization in the clinical skills training to ensure that all interns enter practice with equal competencies. Consideration should be given to experiential learning opportunities such as subintern programmes to consolidate learning and improve preparedness. Improvement in communications with senior clinicians is indicated to ensure that expectations are realistic and reflective of actual training.

KEYWORDS: interns, clinical skills, preparedness

Introduction

An intern is a medical doctor who has completed his/her medical degree and is required to practice medicine in supervised training posts. The intern year is the first level of postgraduate medical training and is an essential step in every doctor’s career. Ensuring patient safety is a fundamental requirement of all medical graduates entering internship. The Irish Medical Council (2014) requires eight domains of professional practice from a graduate. Proficiency in procedural skills is one of these core requirements (Fig. 1). Despite this, previous research has reported that many interns in Ireland do not feel adequately prepared for their intern role.

Hannon1 reported that interns believed their lack of preparation impacted negatively on their overall job experience. They also felt that it was unfair to patients to have underskilled doctors partaking in their care. Abuhusain et al2 found that more than half of the UK interns surveyed perceived that their undergraduate medical education had not prepared them for their internship adequately.

Danish research discovered that medical graduates experienced significant variations in their skills training and stressed that their skills set were substantially lower than that expected by the clinicians with whom they worked.3 A Swedish survey reported that although interns felt well prepared for internship, they experienced a discrepancy between their supervisor’s expectations and their actual abilities.4 In summary, there appears to be a discrepancy between the skills the interns have acquired and the skills the supervising clinicians expect of them. Basic surgical skills such as suturing5 and nasogastric tube (NG tube) insertion6 are reported procedures for which medical graduates feel least competent.

Carr et al7 assessed Irish interns’ competence in IV cannulation and concluded that interns in the hospital investigated were not sufficiently trained to undertake this common procedure. A more recent worldwide review in 2014 found that the average rate of unpreparedness had reduced from previous reports but still consisted of more than a third of those...
surveyed. Irish interns in this study continued to report a deficiency in competence with IV cannulation, venepuncture, and NG tube insertion. As most Irish Medical Schools have introduced formal undergraduate clinical skills training programmes, this study sought to investigate if this has had any impact on recent intern’s preparedness for his/her role. Information was also sought with regard to clinicians’ expectations of skills required by interns to investigate and identify any ongoing discrepancies.

Methods
This study utilized a mixed methods approach of a survey and focus group discussions to allow triangulation of acquired data. To address the known limitations of a survey design, focus group discussions followed the analysis of the survey findings. Focus groups are recognized as useful for gaining a more in-depth understanding of a group’s experiences when compared with surveys. To address the potential limitations of a single method design and ultimately strengthen the validity of the findings, triangulation of quantitative and qualitative research methods was utilized.

Participants. Seventy-five interns in one Dublin teaching hospital were contacted by email over a six-month period from January to June. This time period was purposively chosen to ensure that all interns had already undertaken at least two consecutive intern posts at the time of the survey. In Ireland, each intern post is three months in duration, resulting in four clinical posts being held over the intern year. Participants were contacted by a gatekeeper and asked to complete an anonymous survey. The gatekeeper was an administrator who was not involved in undergraduate or intern teaching. A subsequent request was made by email seeking volunteers from those who had completed the survey to participate in focus group discussions to explore the survey findings and discuss their recent experiences. The emails included information sheets on the studies’ aims and consent forms with regard to utilization of the data collected from the surveys and focus groups for research publications and curriculum reform.

Research tools—survey. The survey was designed in house by the researchers. It was based on the expected competencies for Undergraduate Medical Education in Europe Guidelines (Tuning Project Medicine, 2008), and the specifically required practical procedures are as follows:

- perform and interpret an electrocardiogram;
- perform venepuncture for phlebotomy;
- perform upper limb peripheral intravenous cannulation;
- perform subcutaneous, intradermal, and intramuscular injections;
- perform blood cultures from peripheral using sterile technique;
- perform blood cultures from central lines using sterile technique;
- perform arterial puncture for arterial blood gas sampling in an adult;
- perform male urethral catheterization;
- perform nasogastric tube insertion; and
- perform basic life support including basic airway management.

To encourage a high response rate, the survey consisted of mainly tick-box answers to minimize the time required by participants to complete it. The surveys were anonymous. Demographic details, information on medical training, skills taught and assessed in the training programme, and the skills required as an intern were sought.

Data preparation and analysis. Survey data were entered on a spreadsheet in a Microsoft Word Excel 2013 spreadsheet. Due to the large volume of data collected in the survey, data entry was undertaken in short sittings to reduce error. Another independent cross-checked the entered data for accuracy. Frequency distributions were utilized to quantify the individual skills taught, assessed, and required as an intern were sought.

Focus group format. The focus group was designed, planned, and run by a psychologist familiar with a qualitative research approach. A review of the literature identified that some advocate six to eight participants while others suggest twelve. Smaller convenience groups were chosen for this project due to a limited pool of interns able to leave their clinical areas. The available interns were divided into five focus groups with three participants in each group. The maximum time the interns were available was one hour, which influenced the number of questions asked. The questions utilized in the focus group were devised following the analysis of the survey data and consisted of the following:

1. Did your undergraduate practical skills training prepare you for your intern role? Yes/No: If no…. What were the deficiencies?
2. Did any of your practical skills abilities exceed the expectations of supervising staff? Yes/No If yes…. Which skills?
3. Did supervising senior clinical staff expect performance of skills beyond those taught to you? Yes/No If Yes…. Which skills?
4. If you were to design a practical skills programme, what would you do differently?
5. Would you like to make any further comments?

The discussions were digitally recorded and notes were taken to provide further context. Initially, questions were close ended to start the meeting and then progressed to open ended to promote the flow of conversation. During transcription, the major themes were broadly identified by the frequency of comments in the first instance. Then, the material related to each theme was identified in the transcripts and codes were used to highlight different themes within the text. Subsequently, the cut-and-paste method was used to group responses relevant to a particular theme into one document. Within each theme, categories of responses were established and the frequency of particular issues and topics were noted. To validate the transcriptions, a summary was sent to all participants seeking verification that the interpretations made were a true and accurate reflection of their discussions.

Results
Survey.
Demographics. Seventy-five interns were based in the teaching hospital over the survey period. Fifty of whom completed the survey, with a response rate of 67%. All interns surveyed had been trained in one of the six Irish Medical Schools. There were 32 female and 18 male respondents. The age range was 23–28 years with an average age of 25 years. The range of years of medical training was 4–6 years with a mean of 5.21 years. The majority of interns, 42/50 (84%), had entered medical training as undergraduates, with 850 (16%) being postgraduate entry.

Skills training. All interns had attended procedural skills training in their medical degree programme. A total of 68% reported feeling prepared for their intern role with regard to their levels of competence in procedural skills. All interns were taught intravenous cannulation, basic life support, and basic suture. All interns were requested to perform intravenous cannulation, phlebotomy, and arterial blood gas sampling as demonstrated in Table 1.

Within the survey, 28% of interns reported having a lecture on procedural skills, 14% had attended skills workshops, 30% had been taught skills while on clinical rotations, and 72% had attended a skills laboratory. All had been taught skills by medical staff, 44% had received skills training from nurses, 12% were trained by paramedics, and 20% were trained by technicians.

Assessment of skills. Clinical skills were assessed by objective structured clinical examination for 100% of respondents. A long case was an assessment method experienced by 84%, and of these, 68% of the long cases were unobserved. At the end of the degree training programme, 28% were formally assessed in procedural skills. A total of 72% had their skills levels of proficiency assessed through a logbook or portfolio.

Skills required but not taught. The skills requested by clinical staff, but not previously taught to the interns, are listed in Table 2. These mainly consisted of removal of invasive lines and airway management techniques.

Focus group results. Fifteen interns participated in the five focus groups, and the results are an amalgamation of the data.

Table 1. Skills training.

| CLINICAL SKILL                        | % OF INTERNS FORMALLY TAUGHT DURING MEDICAL TRAINING | % OF INTERNS REQUESTED TO PERFORM SKILL |
|---------------------------------------|-----------------------------------------------------|----------------------------------------|
| IV cannulation                        | 100%                                                | 100%                                   |
| Phlebotomy                            | 72%                                                 | 100%                                   |
| Male urinary catheterisation          | 32%                                                 | 96%                                    |
| Female urinary catheterisation        | 22%                                                 | 0%                                     |
| Arterial blood gases                  | 60%                                                 | 100%                                   |
| Nasogastric tube insertion            | 56%                                                 | 28%                                    |
| IM/sub cut injection                  | 20%/12%                                             | 50%                                    |
| Basic life support                    | 100%                                                | 28%                                    |
| Intravenous drug preparation and administration | 56%                                           | 52%                                    |
| Basic suture                          | 100%                                                | 12%                                    |
| Blood cultures                        | 64%                                                 | 0%                                     |
| Blood transfusion                     | 16%                                                 | 14%                                    |
| Oxygen therapy                        | 52%                                                 | 72%                                    |
| Recording an ECG                      | 56%                                                 | 84%                                    |

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collected through audio recordings and the written notes of researchers. Five major themes emerged from the data based on the questions asked and are reported in Table 3.

Specific comments made by participants included a lack of practice on the so-called difficult patients. This was clarified as “the people who have the worst veins […] because they’re the ones whose lines keep falling out”. A further point discussed was that the limitations of simulated practice, albeit helpful, were reported as these did not equate to the reality of performing the skills on a patient. The interns noted that the training on simulators was essential to maintain patient safety. Participants noted that there was a wide variation in the number of skills taught in their training and in the levels of competence on degree completion. It was agreed that irrespective of previous training, all interns had attained a similar level of proficiency by their second or third week in post due to constant skills practice.

Participants felt that IV cannulation was the skill they used the most during intern year. One intern noted that, “[…] about half the time is putting cannulas in people.” Participants had different views with regard to learning to suture. Some interns valued their ability to suture as they intended to enter the surgical field, while others felt it an unnecessary skill. It was also stated that suturing was a necessary skill if working in the emergency department. Subsequently, it was agreed that once in a clinical post in a hospital, there was no opportunity for an intern to learn how to suture; thus, it was best to have learnt the skill in training.

Participants stated that the expectations of senior staff were low and noted that failure was an expected part of internship. “Even after a good few months when you’ve got quite good at doing most of them you will fail all the time so it’s not unexpected that you’re going to be going ‘I just couldn’t get it.’” Half of the participants emphasized that consultants are generally unaware of the intern’s clinical skills abilities. On eight occasions, participants mentioned that they had been asked to complete tasks that they identified as “completely beyond [their] skill level” as listed in Table 2. Participants reported that in such a situation, they refused to complete the skill.

Observing an intern performing a skill or having intern supervision prior to starting the post was suggested. An extended two-week induction programme with a skills boot camp in the clinical setting was recommended. Suggestions to add shadowing the intern leaving the post was deemed to be insightful. Many suggested doing a nightshift with the outgoing intern also. Working with a phlebotomist or intravenous teams to attain supervised practice on actual patients was also suggested.

Discussion

The survey revealed that the majority of interns (64%) did feel prepared for their clinical posts. A wide variation in the number of skills taught during the medical degree programme is evident. Only three skills were taught to all interns.

Table 3. Themes and issues identified by interns.

| THEME | ISSUES IDENTIFIED BY INTERNS |
|-------|-------------------------------|
| 1. Preparedness for intern practice | Lack of experience with “difficult” patients—e.g. patients with poor venous access, dry inelastic skin, coagulopathies and aggression. Excessive delay between skills training and start of intern year. Lack of real-patient practice. Intern induction inadequate. |
| 2. Skills of most utility | Cannulation Phlebotomy Male urinary catheterisation |
| 3. Skills of least utility | Suturing—not required as an intern Insertion of a nasogastric tube—mainly performed by nursing staff. |
| 4. Difference between clinical staff expectations and interns actual ability | Interns exceeded expectations of supervisors with regards to suturing abilities and ability to insert an NG tube. Consultants are generally unaware of interns actual clinical skills abilities. Clinical staff have expectations of intern failure. Frequent requests to undertake skills beyond ability. |
| 5. Ways to improve the clinical skills programme | Intern teaching/shadowing period close to commencing the actual intern role. Skills practice with real patients under supervision by interns. Teach the skills that are frequently requested e.g. central line and chest drain removal. |
Interns, namely, intravenous cannulation, basic life support, and suturing. Interestingly, despite this difference, there was an absolute agreement that those who had received less pre-graduate training had in essence caught up and attained the same levels of proficiency within a few weeks of starting their first post owing to repeated clinical practice. This supports the reported benefits of repeated and deliberate practice in the acquisition of skills competence. Overall, participants expressed that their prior training in practical procedures eased their transition into their new role and adequately prepared them for their first post. This is an improvement on previous findings.

The European guidelines suggest that all medical graduates should be able to perform a basic suture. Davis et al. have recently reported on the inadequate surgical skills training in UK medical degree programmes. However, suturing ability was not deemed of high utility by this group, but as a core surgical skill. Surgical workshops could be offered to medical students with an interest in pursuing a surgical career to achieve proficiency in basic surgical skills. This would then facilitate consolidation of these skills in hospital rotations. Furthermore, these students could benefit from an intensive surgical subinternship. Given the reported shortage of surgical trainees, early skills acquisition in special interest groups with subsequent clinical consolidation may improve waning interest in this specialist field.

Discrepancy between senior staff’s expectations and medical graduates’ abilities is a potential stressor and may impact on patient safety. Consideration should be given to adding the skills identified in Table 2 to the training programme. It was reassuring to note that all participants were assertive in declining the actual performance of skills outside their competence. Improved communications between training schools and clinical supervisors are indicated to clarify intern’s actual skills abilities and collaborate with regard to regular review of the clinical requirements of the intern.

Suggested improvements in the training programme included early patient contact with exposure to the reported difficult patients. Previous research has reported a direct correlation between early patient contact and intern’s preparedness. The prolonged gap between learning a skill and applying it as an intern could be addressed with extended intern induction programmes. Recently, surgical skills boot camps have proven effective in consolidating previous skills learning. An apprentice model of actively undertaking the intern role under direct observation by senior surgical staff has been shown to enable final year students to gain insight into the realities of the intern role within the team dynamic. Attempting the role of communicator, professional, and patient advocate in a supervised manner in the clinical setting proved a very rewarding experience for the final year students. A subintern role showed promise as a preparatory learning opportunity for the intern role.

### Conclusion
Training requirements for doctors in Europe are regulated by EU Council Vocational Directives. The current legal requirement for medical schools in Europe is to provide 5,500 training hours. However, the quality and content of these hours are decided by individual institutions. This appears to lead to variability in training between medical schools; however, interns report that they redress this inequality through repeated practice early in their first posts. The levels of competence achieved through this approach are unknown. The Tuning Project (Medicine) attempts to standardize training by recommending specific learning outcomes and competences. However, these are guidelines rather than mandate. Core skills need to be taught to competence to all interns in a standardized fashion in medical training, through skills boot camps or through subinternship programmes. Senior clinical staff need to be better informed with regard to intern’s actual clinical skills abilities.

### Limitations
The sample size is small. Surveys have well reported methodological weaknesses. The focus groups, although small, attempted to address the weaknesses of a survey study design.

### Ethics
Approval to undertake this study was sought and gained from the Directorate of Health Sciences Research and Ethics Committee. Participants gave their written, informed consent to take part in the study. As the primary researcher was well known to the interns and taught the clinical skills programme, a gatekeeper distributed and collected the surveys to reduce any impact of a power relationship and/or tacit coercion. Furthermore, the primary researcher did not participate directly in the focus group discussions. This research project complied with all principles of the Declaration of Helsinki.

### Learning Points
- Most interns feel prepared for practice.
- Skill deficits are improved in the first intern post through deliberate practice.
- IV cannulation, phlebotomy, and arterial blood gas sampling are the most commonly required skills.
- There is discordance between consultant expectation and intern ability.

### Author Contributions
Conceived and designed the project: MM, AON, AG, and PFR. Conceived and designed the focus groups: SC, JF, AR, SR, AON, MM, and PFR. Analyzed the data: MM, AON, AG, PFR, SC, JF, AR, and SR. Wrote the first draft of the manuscript: MM, AON, SC, JF, AR, and SR. Contributed to the writing of the manuscript: MM, AON, AG, SC, JF, AR, SR, and PFR. Agree with manuscript results and
conclusions: MM, AON, AG, SC, JF, AR, SR, PFR. Jointly developed the structure and arguments for the paper: MM, AON, AG, SC, JF, AR, SR, and PFR. Made critical revisions and approved final version: MM, AON, AG, SC, JF, AR, SR, and PFR. All authors reviewed and approved of the final manuscript.

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