Are they ready? A survey of postgraduate year 1 and 2 surgical house officers

Vanshay Bindra, Phillip Chao, Sanket Srinivasa, Jonathan Koea

ABSTRACT

AIM: An online survey was undertaken to analyse the perception of medical school graduates, in postgraduate years 1 and 2, of being ready to work (preparedness) and of managing the demands of practice as a junior doctor on a general surgical attachment.

METHODS: An email-based survey was designed to assess medical school graduates' sense of preparedness, and was sent electronically to all house officers at the beginning of their 3-month attachment in general surgery between December 2020 and December 2021. One email reminder was sent 2 weeks after the initial email with the embedded survey hyperlink.

RESULTS: The overall response rate was 50%. Of those, over 90% had accompanied surgical teams on acute calls and over extended hours as a medical student. However, only 50% had ever attended a trauma call or a resuscitation call with clinical teams. Half of the respondents indicated that they would have liked specific teaching on mental and physical self-care, preparation for night shifts and extended periods of duty as well as in prioritisation, delegation and management of workloads.

CONCLUSION: This survey showed that new doctors lacked dedicated teaching in professional behaviours and felt it to be an important part of medical training and preparation for medical practice.

In Aotearoa New Zealand, medical students complete undergraduate training at 1 of 2 medical schools, in Auckland and Dunedin, in a 6-year course. After graduation, postgraduate years 1 and 2 (PGY 1 and PGY 2) are spent working as a house officer in hospitals rotating through different specialty services in 3-month attachments. At least one of these attachments in the first year must be in a surgical specialty, and many house officers choose to complete this in general surgery. The medical school curriculum emphasises acquisition of knowledge in lectures and tutorials supplemented with clinical attachments to surgical teams in metropolitan and rural hospitals. During these clinical attachments there are opportunities for medical students (defined as students in years 4, 5 and 6 of the medical school course) to join clinical teams during acute assessment of patients, managing emergencies and ward calls as well as routine ward work. However, out-of-hours work is not mandatory and medical students are not permitted to work night shifts during surgical attachments. This has tended to emphasise the attractive aspects of surgery (such as elective operating experience and assessment of patients in outpatient clinic) and minimised exposure to the less glamorous, but no less important, parts of surgical work such as overnight cover, attending ward calls to assess patients, emergency surgery, management of bereavement and maintenance of self-care and health.[1] Historically, many of these issues have been managed by individual practitioners and the apprenticeship model of teaching, whereby students spent extended periods of time with senior house surgeons or registrars in training and their teams. This meant that they were more likely to gain exposure to a wide spectrum of clinical work and observe techniques for coping with it.

This investigation was undertaken to analyse house officers' perceptions of being ready to work (preparedness) and of managing the demands of practice as a junior doctor on a general surgical attachment. As such, the paper looked at what medical school experiences and life skills were taught that may have been beneficial in preparing medical students for the day-to-day work of a house officer on a general surgical run.

Methods

An email-based survey (Appendix 1) was designed using Survey Monkey™ (www.surveymonkey.com) to assess how prepared medical school graduates felt, in their postgraduate years 1 and 2, for work as a surgical house officer. The survey was sent electronically to all house officers at the beginning of their 3-month attachment in general surgery between December 2020 and December 2021. One email reminder was sent 2 weeks after the initial email with the embedded survey

hyperlink. The timeframe of the survey administration covered a full year of clinical attachments for house officers and included house officers in their first year of practice following medical school graduation, as well as those in their second year of practice.

The first part of the survey asked seven yes/no/unsure questions about each house officer's experiences as a medical student in general surgery attachments. These were based on scenarios that a first-year house officer may encounter when working in general surgery. This part of the survey also asked participants if they received/did not receive training and if they would have liked training in particular areas.

The second part of the survey was qualitative and asked participants to enter free text on the following questions:

1. What they were most looking forward to in starting work as a house officer.
2. What they were most fearful of in starting work as a house officer.
3. What changes they would make to their undergraduate training to make them feel more prepared for work as a house officer.

The project was reviewed by the Northern Regional Ethics Committee and approved as a staff survey with no patient involvement.

Results

Demographics

Of the 27 house officers assigned to the Department of General Surgery between 1 January 2021 and 31 December 2021, 13 responded (response rate 50%). Of the 13, six were male and seven were female. All participants were under 30 years of age (nine between 20–25 years and four between 26–30 years). Twelve out of 13 attended The University of Auckland and one attended the University of Otago to obtain their undergraduate medical degree. Four participants took an extended period of time off work – defined as greater than 6 months. For 11 of the participants, this was their first full-time job, reflecting that this was their first year of medical practice.

Medical student experience

The responses to questions relating to clinical experiences obtained during medical student clinical attachments are summarised in Table 1, while the responses to questions relating to specific situational training provided during medical student attachment are summarised in Table 2.

When asked what participants were looking forward to about starting work, three main themes emerged. House officers felt that they were finally part of the medical team—much more so than as a medical student. Following on from this, they felt that they had more responsibility and they were able to be useful and contribute to patient care. The last theme, shared by the majority of participants, was that they were finally being paid for their work.

Table 1: Summary of responses to questions relating to medical student clinical attachment experiences.

Question	Yes	No	Not sure
Accompanied team on call	12	1	0
Accompanied team on call during extended hours	10	3	0
Worked a night shift	0	13	0
Attended a trauma call with my team	6	6	1
Attended a resuscitation call with my team	6	7	0
Took part in team meetings where patient ethical treatment issues were discussed	11	1	1
Received instruction or training in managing end-of-life issues	7	5	1

Table 2: Summary of responses to questions pertaining to training received during medical student clinical attachment.

Question	Received training	Did not receive training	Would have liked training
Mental self-care	6	7	6
Physical preparation for night shifts and long days	1	11	10
Professional expectations of medical role	8	5	1
Presenting patient histories and examination findings	12	2	2
Dealing with confrontation/angry and aggressive patients and relatives	9	4	4
Managing workloads with prioritisation and delegation	4	8	9
Interacting with different cultures to my own	7	6	5

Table 3: Potential curricula for professional skills topics to be taught to medical students as preparation for clinical practice.

Domain	Professional skill
Practitioner focussed	Stress management and mindfulness Self-care and managing lack of sleep Caring for colleagues
Patient focussed	Cultural safety and competency Caring for a distressed or angry patient Managing bereavement and end-of-life Prioritisation, triage and resource allocation
Organisation focussed	Creating successful teams and delegation Managing conflict with colleagues and under-performance Principles of governance and management

Discussion

This investigation highlights some of the issues that face medical graduates when they transition from being a university student to a medical practitioner practising as a house officer. Currently, preparedness for life as a hospital-based junior doctor can be considered to involve three domains: development of an academic knowledge base for the management of unwell patients, based on a thorough understanding of anatomy, physiology and pathology; development of specific technical and practical skills such as intravenous cannulation and urinary catheterisation; and, finally, the development of specific professional skills such as resilience, crisis management, the abilities to prioritise, delegate and work under pressure or sub-optimal conditions. Currently, the medical curriculum focusses on delivery of a sound knowledge base via a mixture of didactic lectures, small group teaching sessions and access to online resources for self-directed learning, while specific technical skills are taught during clinical attachments via simulation and focussed practical workshops.

This survey attempted to measure the amount of training and preparation supplied to Aotearoa New Zealand medical graduates in the development of specific professional skills, and has demonstrated that, while most respondents had accompanied their clinical teams during extended hours as a medical student, only half had attended a trauma call or a cardiopulmonary resuscitation event as students and less than half had received specific teaching in mental self-care, professionalism, managing workloads and delegation and cross-cultural interaction. None had been involved in an overnight shift as a medical student and although such a commitment should not be mandated for students, it is important to acknowledge that overnight work is an inevitable part of medical practice and some consideration should be given to preparing medical students for the demands of this work. Correspondingly, the majority had received training in patient case presentation and had been involved in clinical meetings where ethical issues were discussed and managed. Other investigators have found that between one to two thirds of European and British medical graduates feel unprepared and light on experience for clinical work in the hospital setting.[2,3] In addition, Englehardt et al.[1] have shown that, in the United States, only half of surgical residents had experienced an overnight acute call as a medical student and this group were more likely to feel unprepared for the transition to residency, and to subsequently exhibit signs of burnout as measured on scales of emotional exhaustion and depersonalisation. New medical graduates also experience difficulties with gathering relevant information, prioritisation, knowing when to appropriately escalate problems to seniors and managing their emotional responses to clinical situations.[4]

Collectively these findings emphasise that the acquisition of professional skills must be considered an important part of medical training. Historically, student attachments to clinical teams involved immersion in the clinical services with few, if any, other commitments. Emphasis was placed on student integration into surgical teams and an apprenticeship model of teaching practical skills. Accompanying experienced colleagues to trauma calls, resuscitation events and patient assessments exposed students to the professional conduct and the skills involved in crisis management, and allowed time for reflection with colleagues around coping mechanisms and techniques to manage workloads in sometimes difficult situations, as well as ways to achieve a work-life balance. Contemporary evidence confirms that, for medical students, longer exposure to clinical teamwork experience[4,5] is associated with feeling "more prepared" for clinical work with higher patient risk e.g., assessment of a deteriorating patient. In contrast, university teaching only provides good preparation for professional activities associated with low patient risk, such as medical examination in the outpatient department.[6] Unfortunately, undergraduate medical education in Aotearoa New Zealand has moved away from unstructured clinical opportunities for experiential learning, and in many institutions medical students—even when supervised—are not permitted to write in patient notes, answer phone calls, initiate patient assessments, observe trauma and resuscitation calls or remain in the hospital out-of-hours. In addition, specific consent from patients must be documented prior to any medical student interacting with patients.[7] Much of the drive for this has been related to increasing concerns for both patient safety and student welfare; however, the data from this small survey and others[1–6] indicate that limiting opportunities for experience and participation in the realities related to continuous surgical patient care has a detrimental effect on the preparedness of medical graduates to function effectively as house officers. Current Medical Council of New Zealand

guidelines for training providers are specific on the structure of clinical training and the numbers of assessments, but do not go into detail about the topics or curricula that should be covered.[8]

Virtually all our respondents indicated that they would like to receive teaching in the specifics of clinical professional skills, indicating that there is a demand to recognise and include these skills into a formally, rather than an informally, delivered curriculum. At the authors' institution, a senior surgeon now teaches house officers on resilience and prioritisation. Similarly, self-care, work-life balance, resilience, stress management, prioritisation, cultural interactions, specifics of patient interactions and other professional skills can be taught in small group-based teaching either face-to-face or online. In the United Kingdom students are involved in on-call simulations,[9,10] and are exposed to simulated resuscitation events. However, simulation is recognised as being artificial and does not take into account real-world uncertainty present in many acute clinical situations.[4] Other suggestions include students following experienced doctors and emergency teams for on-call shifts and "reverse shadowing", whereby the student takes on more responsibility but is shadowed by a more experienced team member.[4] This process not only provides a more experiential learning experience for students, but also the opportunity to engage in self-reflection and reflection with colleagues after specific clinical experiences.

Many of the topics assessed in this small survey are already being taught to experienced practitioners as part of conferences and symposia that recognise the importance of these "soft" professional skills in medical and surgical practice (Table 3). Increasing demands on practitioner time have encouraged the uptake of stress management and resilience training while the resource constraints operating currently in the health system have meant that prioritisation, communication and conflict resolution skills are now important. Similarly, the increased opportunity for clinical involvement in governance has meant that clinicians entering management often undertake business- or governance-related courses of study. Recognition of the importance of equity and the need to reach disadvantaged populations has encouraged the development of online and in-person courses in cultural safety and competencies. Collectively, these developments emphasise the growing recognition of skillsets that lie outside those purely related to the scientific practice of medicine for already practising medical practitioners, and the results of this survey suggest that medical students are also conscious of the benefits these skill sets provide—for both the practitioner and the patient.

The limitations of this study include the small participant size and the risk of participant recall bias. However, given North Shore Hospital employs a similar number of house officers in the general surgery department as other tertiary centres around New Zealand the findings of this study are likely to be applicable to the wider junior medical workforce. We also only included postgraduate year 1 and 2 graduates since their medical school experience was the most recent and recall was therefore likely to be most accurate. The period of the survey administration also coincided with the arrival of COVID-19 in Aotearoa New Zealand hospitals, meaning that house officer teaching (weekly every Friday) was made available online and the overall hospital environment was different than before. However, particularly during Level 4 lockdown periods, senior surgical staff were more present than they were previously, since surgical teams divided into PODs each containing four surgeons (of different specialties), two registrars and up to four house officers. Both senior and junior staff feedback was that this form of work fostered closer relationships than routine rostering between senior and junior surgical staff. Reassuringly, our experience and those of other investigators[4,5] indicate that the perception of preparedness improves over the first 12 months of professional life—although this can be accompanied by periods of significant emotional stress,[4] indicating that undergraduate training is not comprehensively preparing our medical students for the demands they will face as house officers.[11] Formally working to integrate medical students into surgical teams as active members with carefully graded clinical responsibilities will mean that, following graduation, students will re-join the clinical workforce rather than feeling like they are entering it for the first time.

COMPETING INTERESTS
Nil.

AUTHOR INFORMATION
Vanshay Bindra: MBChB, the Department of Surgery, North Shore Hospital, Private Bag 92024, Takapuna, Auckland, New Zealand.
Phillip Chao: MBChB, the Department of Surgery, North Shore Hospital, Private Bag 92024, Takapuna, Auckland, New Zealand.
Sanket Srinivasa: PhD; FRACS, the Department of Surgery, North Shore Hospital, Private Bag 92024, Takapuna, Auckland, New Zealand.
Jonathan Koea: MD; FACS; FRACS, the Department of Surgery, North Shore Hospital, Private Bag 92024, Takapuna, Auckland, New Zealand.

CORRESPONDING AUTHOR
Jonathan Koea: Hepatobiliary Surgeon, Department of Surgery, North Shore Hospital, Private Bag 93503, Takapuna, Auckland 0620, New Zealand.
Ph: 64 9 486 8900.
E: Jonathan.koea@waitematadhb.govt.nz

REFERENCES

1. Engelhardt KE, Bilimoria KY, Johnson JK, et al. A national mixed-methods evaluation of preparedness for general surgery residency and the association with resident burnout. JAMA Surg. 2020;155(9):851-859.d.
2. Ochsmann EB, Zier U, Drexler H, et al. Well prepared for work? Junior doctors' self-assessment after medical education. BMC Med Educ. 2011;11:99. doi:10.1186/1472-6920-11-99.
3. Goldacre MJ, Lambert TW, Svirko E. Foundation doctors views on whether their medical school prepared them well for work: UK graduate of 2008 and 2009. Postgrad Med J. 2014;90(1060):63-68. doi:10.1136/postgradmedj-2012-131321.
4. Burridge S, Shanmugalingham T, Nawrozzadeh F, et al. A qualitative analysis of junior doctors' journeys to preparedness in acute care. BMC Med Educ. 2020;20:1-9. doi.org/10.1186/s12909-020-1929-8.
5. Chaou C-H, Yu S-R, Chang Y-C, et al. The evolution of medical students' preparedness for clinical practice during the transition of graduation: a longitudinal study from the undergraduate to postgraduate periods. BMC Med Educ. 2021;12:1-9. doi.org/10.1186/s12909-021-02679-8.
6. Bosch J, Maaz A, Hitzblech T, et al. Medical students' preparedness for professional activities in early clerkships. BMC Med Educ. 2017;17:2-11. doi 10.1186/s12909-017-0971-7.
7. Bagg W, Adams J, Anderson L, et al. Medical students and informed consent. A consensus statement prepared by the Faculties of Medical and Health Science of the Universities of Auckland and Otago, Chief Medical Officers of District Health Boards and the Medical Council of New Zealand. NZ Med J. 2015;128(1414):28-35.
8. https://www.mcnz.org.nz/assets/standards/3ffa217e4a/Accreditation-standards-for-clinical-attachments.pdf. Accessed 28 July 2022.
9. Hawkins N, Younan H-C, Fyfe M, et al. Exploring why medical students still feel underprepared for clinical practice: a qualitative analysis of an authentic on-call simulation. BMC Med Educ. 2021;21:2-11. doi.org/10.1086/s/12909-021-02605-y.
10. Udeaja YZ. Ten tips for organizing a bleep roulette for final year medical students and new foundation trainees. Postgrad Med J. 2021;97:620-622.
11. Patel M. The life of a surgical house officer – why isn't IT helping us? Endless opportunities. Health Care Inform Rev Online. 2007;11(4):26-31.

Appendix 1: copy of survey

Thank you for taking time to complete this questionnaire.

Medical school provides a sound base of clinical skills; however, further to that, operating as a house officer also requires professional skills in scheduling, prioritisation, communication, delegation, resilience and self-care.

This survey will evaluate how ready and prepared you perceived yourself to be in order to meet these professional challenges as a surgical house officer, and ascertain a successful completion of clinical tasks.

1. What age band are you?
   20–25 years
   26–30 years
   31–35 years
   36–40 years
   41 or older

2. What gender are you?
   Male
   Female
   Non-binary

3. What medical school did you graduate from?
   Otago
   Auckland
   Other

4. Did you take extended (>6 months) time off during your medical school course – to work, travel or pursue other interests?
   Yes
   No

5. Is this your first full-time job?
   Yes
   No

6. As a medical student or trainee intern were you able to accompany your clinical teams while they were on call?
   Yes
   No

7. As a medical student or trainee intern did you accompany your clinical teams whilst they were on call for extended hours (e.g., 0800 hours to 2200 hours)?
   Yes
   No
8. As a medical student or trainee intern did you ever work a night shift (e.g., 2200 hours to 0800 hours) with your clinical teams?
   Yes
   No

9. As a medical student or trainee intern were you able to attend a trauma call with your clinical teams?
   Yes
   No

10. As a medical student or trainee intern were you able to attend a resuscitation call with your clinical teams?
    Yes
    No

11. As a medical student or trainee intern were you involved in team meetings where patient ethical and treatment issues were discussed?
    Yes
    No

12. As a medical student/trainee intern did you receive instruction or training in managing end-of-life issues?
    Yes
    No

13. As a medical student or trainee intern please indicate whether you received instruction or training in the following topics and, if not, whether you would have liked to receive training in these areas.

Topic	Yes, I received training	No, I did not receive training	I would have liked to receive training
Mental self-care (dealing with stress and uncertainty)			
Physical preparation for night shifts and long days			
Professional expectations (grooming, punctuality, etc.)			
Presenting patient histories and examination findings			
Dealing with confronta-tion, angry and aggressive patients and relatives			
Managing workloads with prioritisation and delegation			
Interacting with different cultures to my own			

14. As a medical student or trainee intern what were you most fearful of in starting work as a house officer?

15. As a medical student or trainee intern what changes could be made to your training that would make you feel more prepared for work as a house officer?