The Journal of Medical Education Research 2025 Vol 5 No 1 pp 253-264, DOI: 10.5750/jmer.v5i1.2464

PREPAREDNESS FOR CLINICAL PRACTICE: WHAT I KNEW ON MY FIRST DAY AS A NEWLY GRADUATED DOCTOR

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ABSTRACT

Aim: To identify the level of preparedness of Post Graduate Year 1 (PGY1) doctors for clinical practice in New Zealand.
Methods: A survey was sent to PGY1 doctors in 2022 and 2023 six weeks after commencing clinical practice asking them to rate (using a 5-point scale) how prepared they felt starting as a doctor across a range of skills. The respondents were also asked to rank the top three skills in which they wished they had more knowledge when they started, and to provide free text responses with regard to factors that proved challenging during their transition into clinical practice.
Results: There were 128 complete survey responses in 2022 and 113 in 2023. Sixty five percent were female, 33% male, and 1% other. Almost all respondents felt prepared for examining patients, understanding common clinical conditions, taking a history, and communicating effectively and sensitively with patients. Approximately half of all respondents reported being prepared for prescribing safely and calculating medication dosages, 37% for participating in an arrest or resuscitation, and 30% felt prepared for looking after sick and deteriorating patients. When asked to rank the top three skills in which they wished they had more knowledge, 77% of respondents ranked looking after sick and deteriorating patients within their top three.
Conclusions: Most PGY1 doctors felt well prepared for a range of clinical skills at the commencement of clinical practice. However, there were a number of critical patient management skills that are expected and required of PGY1 doctors for which many respondents felt unprepared. The skills taught in the undergraduate programme should accurately reflect the skill mix required by PGY1 doctors for the practise of medicine in New Zealand.

Keywords: clinical preparedness, transition, trainee intern, junior doctor, medical graduates, clinical skills

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INTRODUCTION

The transition from undergraduate medical student to first year house officer can be very demanding. The preparedness for clinical practice of year one doctors to manage the sudden increase in clinical responsibilities, clinical skills, and workload can vary widely between and within medical schools (Goldacre, Taylor, & Lambert., 2010; Kelly, Noonan, & Monagle., 2011; Miles, Kellett, & Leinster., 2017; Monrouxe et al., 2018; Ochsmann et al., 2011; Prince et al., 2004).

Medical graduates are often exposed to new and unfamiliar clinical environments and encounter scenarios that they have not previously experienced during their undergraduate training. Studies have found that graduating medical students are often underprepared, or feel underprepared, for their new role as a clinical practitioner (Cameron et al., 2014; Goldacre, Taylor, & Lambert., 2010; Kelly, Noonan, & Monagle., 2011). However these studies have identified that this lack of preparedness is not in all domains of clinical practice but rather is generally concentrated on a number of specific skills needed to fulfil the duties of a PGY1 doctor (AMC, 2019; Bleakley & Brennan, 2011; Kelly, Noonan, & Monagle., 2011; Miles, Kellett, & Leinster., 2017; Monrouxe et al., 2018; Morrow et al., 2012; Sheehan et al., 2012). Challenges with the transition from student to practitioner isn't unique to medicine alone and is seen in other health professions with vocationally oriented courses (Opoku, Khuabi, & Van Niekerk., 2021).

Recognising the importance of the transition from medical student to medical practitioner, the Trainee Intern (TI) year was added to the 5-year undergraduate medical school programme in New Zealand in the 1970s. Students from both medical schools in New Zealand undergo the TI year. The intention of the TI year is to focus on the integration of theory into practice thereby easing the transition from medical student to postgraduate practice (Tweed et al., 2010). During the TI year, medical students rotate in both hospital and community settings as part of the clinical team whilst still enrolled with the university. It is intended to allow for a graduated increase in responsibility for clinical practice with the expectation that by the end of the TI year graduates will be sufficiently prepared to safely commence clinical practice. A number of other countries have also introduced an undergraduate 'trainee intern' year to help improve the transition to professional practice.

The Standards for Assessment and Accreditation of Primary Medical Programs (Australian Medical Council, 2024) states the expected outcomes of medical students at graduation from a New Zealand or Australian Medical School. These expectations cover Clinical Practice, Professionalism and Leadership, Health and Society, and Science and Scholarship. These benchmark standards should ensure all graduates have the same base skills, enabling them to practise medicine at the PGY1 level safely and with confidence.

In recent years there have been anecdotal concerns from PGY1 doctors, and their clinical and educational supervisors, about their level of preparedness

for their clinical responsibilities in busy secondary and tertiary hospitals in New Zealand. Although the level of preparedness of PGY1 doctors has been studied in Australia with the Australian Medical Council (AMC)/Medical Board of Australia (MBA) Preparedness for Internship Survey (Australian Medical Council, 2019), there is a paucity of local research. This study was therefore undertaken to explore the preparedness of PGY1 doctors for clinical practice in New Zealand.

METHODS

With reference to the Australian AMC/ MBA 2019 Preparedness for Internship Survey National Report (Australian Medical Council, 2019), a survey was developed with specific questions about preparedness for clinical practice. The survey questions covered clinical, hospital systems, professional and self, information, and patient-focused domains.

The survey comprised 28 statements to which participants were asked to indicate on a 5-point scale from ‘very well prepared’ to ‘not at all prepared’ how prepared they felt starting as a PGY1 House Officer. They were also asked to rank the top three skills for which they wished they had more knowledge and experience when they commenced work. There was also the opportunity for free text responses about any other challenges experienced when they commenced work as a medical practitioner.

As there was no access to a national database of new, New Zealand (NZ) medical graduates, the survey was sent to all Directors of Clinical Training, lead Prevocational Educational Supervisors, and Resident Medical Officer support units across all health regions in NZ four weeks after the commencement of the House Officer year with a request to forward the survey to their respective PGY1 doctors. It was hoped that this would ensure the survey invitation would reach as many NZ PGY1s as possible. The survey was sent in 2022 and given the possible effect of Covid impacting on training, the survey was repeated in 2023. The survey was completed online using SurveyMonkey®.

Reminders were sent to complete the survey, again via the above contacts. Having no direct database to work from resulted in a reliance on others and an inability to define who did/did not receive the survey.

Ethical approval was obtained following our institution’s procedure. Information on the research was provided to potential participants, including information on the voluntary nature of the questionnaire, the confidentiality of the information, and the intended use of the resulting data. Participants were asked to provide consent via tick-box at the start of the survey.

RESULTS

In total, 242 complete responses were received (128 in 2022 and 114 in 2023). However, as we did not send the survey directly to PGY1 doctors ourselves but

were reliant upon others in the various regions arounds New Zealand to send the invitation to participate on our behalf, we were unable to confirm the actual number who received the invitation; and hence calculate a true response rate.

Figures obtained from the Advanced Choice of Employment (ACE) matching system (the organisation in NZ responsible for ensuring the employment of all NZ medical graduates) indicated 546 TIs were employed by the national health service in 2022 and 530 in 2023. Therefore, when compared against these national ACE figures, the lowest possible response rates obtained were 23% and 22% respectively. However, as it is likely that not all regions distributed the invitation to their PGY1s, the true rate is likely to have been considerably higher.

Of the respondents, 67% were aged between 20 and 25, and 24% between 26 and 30. Sixty five percent were female, 33% male, and 1% other. Sixty percent were New Zealand European, 27% Asian, 15% Māori, 6% Pasifika, and 12% comprising 14 other ethnicities.

The respondents had completed their TI year across a variety of New Zealand sites, with the greater Auckland region accounting for one-third and Christchurch one fifth of all respondents. One hundred and thirty respondents indicated that they had a secondary trainee intern site, with Auckland and South Auckland being most frequent.

When data from the 2022 and 2023 surveys were compared, there were no statistically significant differences in responses, with 22 of the 28 questions differing by less than 5%. Therefore, data from both years were combined and are shown in Table 1.

Almost all respondents felt prepared for taking a history, examining patients, understanding common clinical conditions, and communicating effectively and sensitively with patients.

Most respondents felt prepared for recording accurate written information such as medical notes, writing an appropriate discharge summary, providing care for Māori patients, making a diagnosis, working as part of a multidisciplinary team, communicating with senior members of the medical team, communicating with patient's whānau (family), selecting and interpreting appropriate investigations excluding medical imaging, and providing care for people of different cultures.

Between 62% and 70% of respondents felt prepared for the day-to-day management of ward-based patients, selecting and interpreting appropriate medical imaging, writing a discharge prescription, providing an accurate and succinct clinical handover, procedural skills such as intravenous (IV) cannulation, arterial blood gas (ABGs), and catheters, effective keyboard skills such as touch typing, and working with hospital IT systems or computer programmes.

When starting as a PGY1 doctor, approximately half the respondents felt prepared for prescribing safely and calculating medication dosages for patients, understanding of hospital organisational wide systems, increased workload

Table 1. Responses to each statement (n = 242)

Clinical Domain	**Very well prepared %**	**Somewhat prepared %**	**Neither %**	**Somewhat unprepared %**	**Not at all prepared %**
Looking after sick and deteriorating patients	3.32	26.97	19.92	33.61	16.18
Participating in an arrest/resuscitation	4.15	32.37	23.65	26.56	13.28
Prescribing safely and calculating dosages	10.00	42.92	13.75	28.33	5.00
Procedural skills, such as IV cannulation, ABGs, catheters	14.11	53.11	9.54	21.99	1.24
The day-to-day management of ward-based patients	15.42	46.25	17.50	15.83	5.00
Selecting and interpreting appropriate medical imaging	7.92	55.42	18.75	17.08	0.83
Selecting and interpreting appropriate investigations, excluding medical imaging	16.60	58.92	14.11	9.96	0.41
Making a diagnosis	10.46	70.29	12.13	6.69	0.42
Examining patients	49.79	46.47	1.66	2.07	0.00
Understanding common clinical conditions	27.50	63.75	7.08	1.67	0.00
Taking a history	78.84	19.92	0.83	0.41	0.00
Hospital Systems Domain					
Understanding hospital organisational systems	11.67	41.25	14.58	22.50	10.00
Effective keyboard skills, such as touch typing	43.75	22.92	15.42	12.08	5.83
Working with hospital IT systems or computer programmes	28.63	41.08	12.45	12.45	5.39
Professional and Self Domain					
Increased workload and time commitment	15.35	38.59	14.52	23.65	7.88
Attending to personal well-being	18.67	33.20	21.99	19.50	6.64

(Continued)

Table 1. (Continued)

Clinical Domain	**Very well prepared %**	**Somewhat prepared %**	**Neither %**	**Somewhat unprepared %**	**Not at all prepared %**
Ensuring sound time management	14.52	40.25	20.75	19.50	4.98
Increased clinical responsibilities	11.20	42.32	22.41	19.50	4.56
Working as part of a multidisciplinary team	34.85	45.23	11.62	7.05	1.24
Communicating with senior members of the medical team	28.22	51.87	12.45	7.05	0.41
Information Domain					
Writing a discharge prescription	17.43	45.64	11.62	17.01	8.30
Providing an accurate and succinct clinical handover	10.00	55.42	15.42	18.75	0.42
Writing an appropriate discharge summary	39.00	48.55	6.22	5.39	0.83
Recording accurate written information, such as medical notes	41.42	47.70	7.95	2.93	0.00
Patient-focused Domain					
Communicating with patient's whānau (family)	31.67	47.08	10.83	8.33	2.08
Providing care for people of different cultures	22.92	49.58	18.75	6.67	2.08
Providing care for Māori patients	35.15	52.72	8.37	3.35	0.42
Communicating effectively and sensitively with patients	52.92	41.25	3.75	2.08	0.00

and time commitments, ensuring sound time management, and increased clinical responsibilities. Thirty seven percent felt prepared to participate in an arrest or resuscitation, and 30% of respondents reported that they felt prepared for looking after sick and deteriorating patients.

When asked to rank the top three skills in which they wished they had more knowledge, 77% of respondents ranked looking after sick and deteriorating patients within their top three. Thirty two percent ranked procedural skills such as IV cannulation, ABGs, and catheters, 31% ranked prescribing safely and calculating dosages, and 29% ranked the day-to-day management of ward-based patients within their top three.

At the end of the survey participants were given the opportunity to respond to a free text question about factors that proved challenging during their transition. Twenty percent of respondents commented on time management, workload, and workload prioritisation. A further 20% identified performing practical skills and making clinical decisions, including prescribing, as being challenging. Challenges with relocating to another region or hospital were noted by 15% of respondents.

The following quotes from three different PGY1 doctors to this free-text question highlight the concern with being unprepared for some of the key skills:

The fact that every single doctor I ever talked to, new or old, said that they felt unprepared for being a PGY1. That has to tell you that something is fundamentally wrong with med school if no one feel[s] prepared to do the exact job med school is preparing us for!!

Definitely need more effective teaching on prescribing and caring for sick patients (especially after hours). Honestly why did we not get good teaching on this??? This is like house officer bread and butter.

How were the key things a house officer needs to know not taught to us in 6 years of med school??

DISCUSSION

The transition from medical student to PGY1 doctor can be very stressful and one that is usually well remembered by doctors, often for the wrong reasons. Given the challenges of clinical practice in an increasingly busy and stressed health system, having well prepared PGY1 doctors is a clinical imperative.

In this study it was reassuring that most PGY1 doctors felt prepared for many aspects of clinical care, such as taking a clinical history, examining a patient, making a diagnosis, understanding common clinical conditions, selecting and interpreting appropriate investigations excluding medical imaging, and communicating effectively and sensitively with patients. These findings are similar to those found in the AMC Joint AMC-MBA Preparedness for Internship 2019 (Australian Medical Council, 2019), align to the Standards for Assessment and Accreditation of Primary Medical Programs (Australian

Medical Council, 2024), and support the findings from other studies (Bleakley & Brennan, 2011; Kelly, Noonan, & Monagle., 2011; Miles, Kellett, & Leinster., 2017; Monrouxe et al., 2018; Morrow et al., 2012; Prince et al., 2004)

However, there are critical patient management skills that are expected and required of PGY1 doctors in secondary and tertiary hospitals. In this study, only approximately a third of respondents reported feeling prepared for looking after sick and deteriorating patients and participating in an arrest or resuscitation. Given that the Standards for Assessment and Accreditation of Primary Medical Programs (Australian Medical Council, 2024) state the expected knowledge, skills, and behaviours of graduates, it would seem reasonable that employers should have confidence in the skills of their PGY1's in the areas prescribed. As standards are defined for each of the above (statements 1.20, 1.21), there appears to be a misalignment in these areas between the expected and actual skill levels of graduates. The lack of preparedness in these clinical skills have also been found by others (Kelly, Noonan, & Monagle., 2011; Monrouxe et al., 2018; Ochsmann et al., 2011), and New Zealand PGY1s felt less prepared than their Australian counterparts in these patient management skills (Australian Medical Council, 2019). Being competent to handle the wide range of clinical duties expected of PGY1 doctors in hospital practice is critical to good patient care. Insufficient preparation for clinical practice not only places the patient, but also the practitioner at significant clinical risk.

In addition, only half the respondents felt prepared for prescribing safely and calculating medication dosages, attending to personal well-being, managing the increased workload and time commitments, and ensuring sound time management. These again do not align well to the expected graduate outcomes (statements 1.17, 2.7, 2.8), but support other research findings (Bleakley & Brennan, 2011; Kelly, Noonan, & Monagle., 2011; Monrouxe et al., 2018; Morrow et al., 2012; Ochsmann et al., 2011; Prince et al., 2004; Sheehan, Wilkinson, & Bowie., 2012). Ensuring better preparation, orientation, and management of expectations for their new clinical role is critical for the new PGY1's personal well-being and health, especially given the major challenges and recurrent stressors of clinical practice.

Attention must also be given to preparedness for non-clinical skills. In this study almost one in five reported not having effective keyboard skills, such as touch typing, nor being prepared for managing hospital software programmes. Interestingly the difficulty with touch typing may reflect the shift away from traditional computers and keyboards to touch screens. And while seemingly not a significant issue, the speed to complete electronic notes and the cognitive automaticity touch typing allows (Trubek, 2011), ensures a much greater focus on the understanding of clinical content rather than the challenge and process of typing. With the almost total reliance on electronic clinical records in many hospitals across the country, proficiency in IT and keyboard skills is a core skill for all medical practitioners.

A concern from respondents in the free text responses was why trainee interns were not being well prepared for the very role they are expected to perform as a PGY1 doctor. The transition from medical student to clinical practitioner has always been challenging. However, it is possible that the current clinical environment and culture is changing so quickly that competencies gained as an undergraduate are less transferrable. The clinical environment for PGY1 doctors is increasingly under pressure with overcrowded clinical areas, more complex patients with higher levels of acuity, and frequently being understaffed. Culture and context also varies across services and wards within hospitals and PGY1 doctors change rotations frequently. Contextual competence is critical to responding effectively to the ever-changing demands of the clinical environment.

There are limitations to this study, with the first being the response rate against the national ACE figures of PGY1 doctors; 23% and 22% respectively for 2022 and 2023. However due to the inability to access a centralised data base for all PGY1 doctors, it is not known how many PGY1 doctors received the invitation to participate in this study. The true response rate is likely to have been considerably higher. In addition, this study is based on PGY1 doctors' self-perceptions rather than an objective assessment of competence. The use of the term 'preparedness', although not necessarily a standard metric in all educational literature, was thought acceptable in terms of understanding by respondents and consistent with the AMC study (Australian Medical Council, 2019).

While unable to effect immediate change in our current health system, there is an imperative for medical students to be comprehensively and gradually prepared for clinical practice reflecting the demands of hospital medicine. From the employers' perspective, there is a strong expectation that what is taught in the undergraduate programme will accurately reflect the current skill mix required for the safe practise of medicine, and that these skills will be rapidly and effectively transferred into practice. This apparent disconnect and dissonance between some of the required knowledge and skills necessary for safe clinical practice as a PGY1 and undergraduate training requires greater exploration and collaboration between the employer and the university.

There is the expectation in the final year of training that TIs will learn and practise skills while on clinical placements and that the work experience will support the smooth transition of learning to the workplace. However, ensuring the undergraduate curriculum accurately aligns and equates to current hospital practice is a major challenge. In a perfect educational environment, clinical skills training would be undertaken in a close temporal relationship to clinical practice. This may at times be difficult to achieve however, where the learning in clinical services may not necessarily provide the required learning opportunities nor the necessary reinforcement of prior learning. Competing academic requirements necessitating the frequent departure of TIs from critical

learning opportunities in clinical areas as noted by respondents in this study may also impact on the clinical learning experience.

Closer collaboration between the employer and universities should be encouraged to improve the preparedness of Post Graduate Year 1 doctors for clinical practice in New Zealand. Further research is currently being undertaken to determine how PGY1 doctors can be better prepared for commencing work as a doctor and how the employer and universities can collaborate to ensure their transition into the workforce is a safer, smoother, and less stressful experience.

ACKNOWLEDGEMENTS

Munya Marowa for assistance in the initial exploratory stages of this study and Dale Sheehan for comments on an earlier manuscript.

CONFLICT OF INTEREST AND FUNDING DECLARATION

Funding was not received for this project and there is no conflict of interest to declare.

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