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WEB PAPER

On the road: Medical students' experiences on paramedic placements

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Abstract

Background: Undergraduate students' in several Australian medical courses undertake short placements with Paramedics to increase their awareness of biopsychosocial factors affecting health, provide opportunities to apply knowledge and clinical skills in health contexts and to develop inter-professional knowledge.

Aim: The purpose of this study was to provide the first report of medical students experiences on Paramedic placements, by identifying the opportunities and range of clinical activities they experienced, and to seek feedback to improve placements.

Methods: Students ($n = 33$, 72% response rate) completed an 11-question post-placement survey requiring Likert-scale responses with open-ended questions requiring narrative responses.

Results: Students employed communicative, observational and basic clinical skills 'on the job' during the placement. They had exposure to a range of experiences from non-emergency patient transfers to violence and intoxication, trauma, suicide and death. Students witnessed the importance of different individuals as well as the importance of the inter-professional network in delivering pre-hospital care. Overall, students were over-confident of their abilities, but found the placements to be valuable learning opportunities that met the intended outcomes.

Conclusion: Suggested improvements include better orientation, management of expectations and debriefing, shifts with a higher rate of call outs, direct clinical teaching and introduction of a 'patient journey' approach to the placement.

Introduction

Students in the health professions spend a significant amount of time in clinical placements where they apply learning in clinical contexts. Clinical placements are considered to be the most effective strategy to facilitate student's development of clinical competence for safe practice as interns (Australian Medical Council 2002). Traditionally, these clinical learning opportunities occur in tertiary hospital settings where students are attached to clinical teams and participate in ward rounds, clinics and bedside teaching (Chipp et al. 2004; Worley et al. 2004). However as patients spend less time in these institutions and care moves towards more community based models, the breadth of clinical exposure and time to spend with patients is decreasing. In Australia, the overall number of medical students and interns in training has increased placing pressure on clinical learning opportunities in a constrained training system (Victorian Government 2007; NHWT 2009). In response, undergraduate and postgraduate medical education are increasing supervision, building greater structure into placements and offering a broader range of clinical placements available to students.

Early clinical training in Australian medical courses provides exposure to a wide range of patient care settings. This training involves short, group-based visits to hospitals, General Practices, aged care facilities and community health services with the aim of contextualising learning and skills developed in campus based environments. Patient contact occurs, but is

Practice points

- Paramedic placements provide medical students with opportunities to apply clinical and communication skills, to witness relationships between socioeconomic factors and health and learn.
- Paramedic placements are ideal introductions to inter-professional health care.
- Formal orientation for Paramedic staff, students and hospital emergency staff will optimise achievement of placement outcomes.
- Students encounter many challenging situations (violence, trauma, death) for which debriefing and counselling should be available.
- Ensure that 'excitement' does not overshadow learning opportunities on these types of placements.

generally limited. In parallel with these visits, students learn clinical skills in laboratory and simulation-based environments that provide a controlled, safe learning environment where they gain initial experience in learning clinical skills and procedures. Together these clinical learning experiences provide students with the opportunity to both develop knowledge and skills and understand the environment and system in which they will ultimately be practiced.

Despite widespread use of clinical placements in medical and health professional training, little is known about students'

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experiences on clinical placements. In Dentistry, there has been a focus on hours of training and variation in experiences and their (lack of) relationship with graduate competence (Seddon 2004; Derringer 2008). Worley et al. (2004) reported that medical students completing community-based placements experienced greater patient contact and more time in supervised clinical activities than peers in a tertiary teaching hospital. Furthermore, the students found the community placements more valuable learning experiences than those in the tertiary hospital.

Paramedic placements

There is also limited published information about Paramedic placements. Melby (2001) reported nursing student's experiences on paramedic placements in the UK, highlighting the use of communication skills, understanding of the social determinants of health, and increased perceptions of inter-professionalism that underpins patient care. In Australia, Boyle et al. (2008) reports that the purpose of paramedic placements to introduce students to the responsibilities and experiences of the ambulance paramedic. The study reports students' development of skills and deeper understanding of team work through the placement experience. Ivanov (2005) reports that paramedic students on placement developed road skills and safe operation, their approach to patients, learning about multidisciplinary team work and provision of basic and advanced life support. On two paramedic shifts in Sydney Australia, medical student Forbes (2004) gained an 'insight into all types of pre-hospital care' through attending two pre-hospital traumas, several medical admissions and significant numbers of 'inappropriate callouts'. Celenza et al. (2001) reports that students witness trauma and deaths, and also cautions about the influence of "excitement and enthusiasm of the teaching experience" to the detriment of perceptions and achievement of overall learning outcomes in emergency medicine placements.

At the University of Tasmania, Paramedic placements were added to the range of clinical placements available the pre-clinical years of the medical course. This voluntary placement was offered after students had completed their cardiovascular and respiratory system blocks and constitutes the beginning of their introduction to the Emergency medicine curriculum (ACEM 2007). It was designed to increase student awareness of biopsychosocial factors affecting health, to apply knowledge and clinical skills in context, and gain deeper inter-professional perspectives of the health care system through experiences in pre-hospital emergency medicine. The random nature of ambulance work and the pilot nature of this program meant that expectations of clinical experiences were not pre-defined.

Participation requirements included a current first aid certificate, wearing suitable clothing with clear student ID and a safety vest. In addition, students had already completed Safe-to-practice checks (criminal history, immunisation and health conditions review) prior to undertaking the placement. Instructions given to students were to arrive 10 minutes before their shift (0800 to 1800 rural locations or 0730 to 1730 Hobart) and bring their own lunch and drink. Students were placed individually or in pairs for each shift, each being part of

a separate ambulance team. Students were allocated to a position in the back of the ambulance. All placements occurred between August-October 2010. Students were offered counselling following placement if requested.

This study is the first to report medical students' experiences on Paramedic placements. We identify the range of clinical opportunities and activities experienced and suggest improvements based upon their feedback.

Methodology

Second year medical students ($n=45$; 18 males and 28 females) at the University of Tasmania elected to attend at least one $\times$ 10 hour ambulance placement as a part of a pilot project. The ambulance placement was a new placement choice negotiated for introduction in the course. This placement occurred between 7am and 6pm on a weekend day. All students who attended the paramedic placement were requested to complete a post-placement, online survey. This survey comprised questions about their learning experiences, insight and issues in regards to their experience on the paramedic placement. The first section required the students to respond to 11 statements with responses on a 5 point Likert scale. Likert scale responses were converted to numeric data i.e. strongly disagree = 1 to strongly agree = 5. Analyses of descriptive data were undertaken using SPSS Version 18 (SPSS Inc, Chicago, USA). Data were summarised through descriptive statistics and differences between genders assessed through t -tests. Statistical significance was indicated if $p < 0.05$.

There were additional open-ended questions that allowed for extended descriptions/answers related to the 11 statements in the first section of the survey. One participant did not respond to any of these questions and 18 responded to some but not all questions. Answers were coded and key categories emerged throughout this process. In addition, 12 students provided extended narrative descriptions of their ambulance placement experiences as part of course assessment. These data were analysed and categorised qualitatively for common themes and issues occurring in the placement. This study was approved by the Human Research Ethics Committee Network of Tasmania.

Results

Paramedic post-placement survey

The paramedic placement was attended by 45 students of whom 33 responded to the online survey (73% response rate). Respondents were primarily female ($n=20$, 62%) and eight of the thirteen non-responding participants were female. Independent t -tests were conducted to test for gender differences in the survey items.

Student responses to the survey indicate overall positive perceptions of the placement program. The mean for all statements was well above 3.0 (Table 1) indicating broad agreement with the statements. The highest scoring items were *The placement generally increased my interest/motivation in medicine* where 100% of respondents agreed or strongly agreed; *The placement was a valuable learning experience*

Table 1. Descriptive statistics for Paramedic Post-Placement Survey questions ($n = 33$).

Item	Mean	SD
1.1 The placement generally increased my interest/motivation in medicine.	4.97	0.17
1.2 The placement specifically increased my interest in emergency medicine.	4.03	0.95
1.3 I was well prepared for the placement.	3.52	0.67
1.4 I was able to apply my communication and clinical skills on the placement.	3.76	0.94
1.5 I gained a good understanding of the role and responsibilities of Ambulance/Paramedic officers through this placement.	4.45	0.56
1.6 I gained a good understanding of the relationships between Paramedics and clinicians through this placement.	4.00	0.97
1.7 I gained a good understanding of the relationships between Paramedics and other health care workers through this placement.	4.03	0.81
1.8 I gained a better insight into patient-centred care through this placement.	3.91	0.72
1.9 I gained a good insight into the range of health problems experienced by people in personal and community settings.	4.09	0.81
1.10 Overall, the placement was a valuable learning experience.	4.64	0.55
1.11 The placements should be continued next year.	4.88	0.33

Scores range from a minimum of 1 to a maximum of 5.

where 97% agreed and *The placements should be continued next year* where 100% of students agreed for a continuation of the placements. The area for greatest improvement was student's level of preparation for the placement and their opportunity to apply clinical skills in pre-hospital contexts. Only one item, *The placement should be continued next year* showed significant gender-based difference $t(19) = 2.18$, $p = 0.042$ with males answering more positively than females. There were no gender differences in other items.

Whilst the quantitative survey data show student's overall positive perceptions of the paramedic placements, analysis of the extended answers to the open-ended questions and the essay-based data (which have been combined) provide a richer appreciation of the activities, experiences and learning during the placements.

Orientation to pre-hospital care

Generally, students indicated an overall lack of preparation and clear expectation of the placement. They expressed that a greater indication of the possible events (low and high excitement) and requirements of the day would have been advantageous. Many students attended exciting call-outs, however one student on a patient transfer shift stated:

"(I was) prepared in terms of knowledge. Had high expectations, reality was unexpected."

Prior to this placement most students had little interest or understanding of how the emergency team operated. A deeper understanding of emergency medicine and pre-hospital care and inter-relationships between health professionals in each group was a reported learning outcome for a third of students. Four students reported that their interest in the discipline was greatly increased. At least one student changed their views of a potential career in emergency medicine, whilst for another student the experience confirmed their choice of a different career pathway.

Application of clinical skills

Communication skills with allied health professionals and patients were developed most during the placement. Two thirds of students emphasised the importance of communication skills. Many felt that this specific factor had not been

practiced enough in class and felt reserved and nervous to be communicating with 'real' patients. One student stated:

"This experience gave me the opportunity to interact with patients in a professional environment and practice my clinical communication skills, something which I have had little previous exposure to."

When emotional patients were encountered, the medical students reported being very unsure of how to handle the situation and whether they should attempt to communicate with the patient or to communicate with their family, or both. Two encounters stand out, the first with a call out to a drug affected youth showing violence toward family members:

"I could see his mother start to blame herself for the situation... Looking back, this is one of the moments that upset me most - the fact that I did not process this woman's grief and know how to offer comfort in an awful situation."

And the second involving a call out to house where a distressed man was still attending his deceased partner.

"our responsibility had shifted to one of emotional support to the grieving husband. When confronted with the hysterical man, crying profusely, again, I froze up, with little to no idea how to console him in his moment of need."

Overall, students were also surprised by their communication skills on two levels: their ability to communicate with most patients efficiently but also their inability to respond to highly emotional encounters with suffering and death.

Interestingly, no student reported improvement in clinical/procedural skills. Several students reported high anxiety and nervousness that affected their responses, once that passed they realised that she was more than capable in having a conversation and taking a history from the patient. Performing practical skills on a 'real' patient in unfamiliar circumstances provoked considerable anxiety:

"During the procedure (taking a blood pressure reading) I first experienced anxiety as this was my

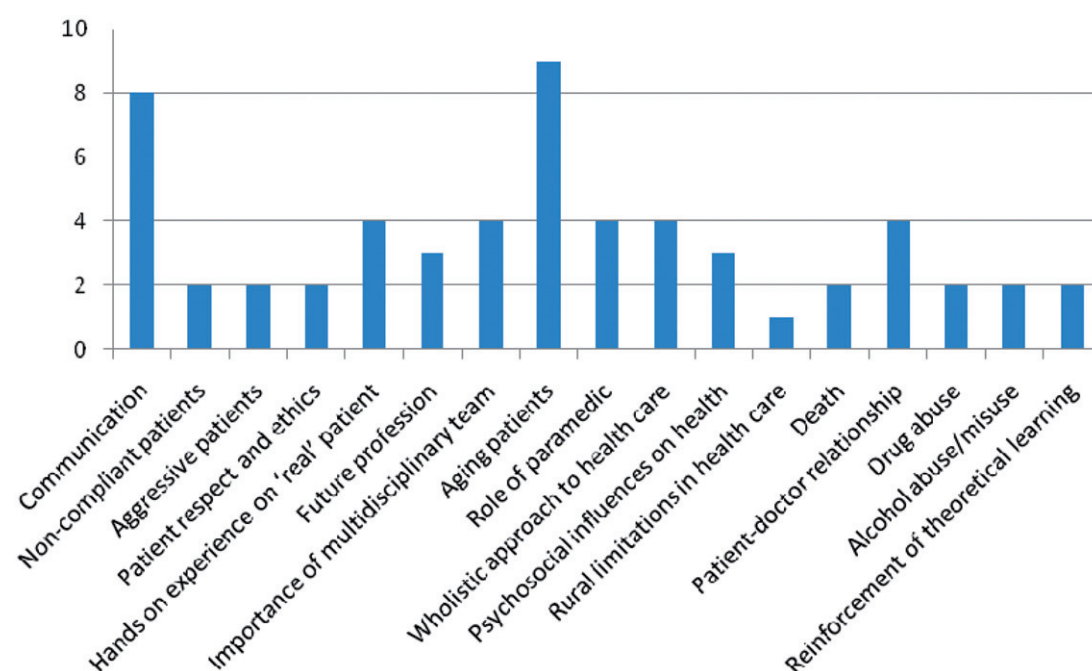


Figure 1. Frequency and range of experiences reported by medical students on paramedic placement.

first time with a real patient which got progressively worse as I failed to find the pulse... I have taken blood pressure dozens of times and as a student that feels like a lot."

The placements were more complex than class-based teaching because they required the rapid application of several skills at once. One third of students specifically mentioned that personal, hands on experience with a 'real' patient was a major learning opportunity afforded by the placements, whilst at the same time noting that:

"I have never had to perform tasks on a patient so fast and at the same time also had to communicate and process what is happening to them."

The dual task of communicating while performing a practical skill under authentic situations (i.e. the back of an ambulance) challenged students who are really early learners.

Range of clinical experiences

Students were asked to describe key learning experiences whilst on placement, and most students described specific cases they encountered. The call out experiences and interactions with patients had the greatest impact on students. There were 60 key experiences described by students (Figure 1). At least one student indicated a preference for observation rather than participation during the placement. Clinical experiences reported included (i) performing 12-lead ECGs on 2 patients with MI and CPR on patient who died at the site, (ii) taking patient histories, (iii) assessing and managing an elderly woman with severe hypothermia; an elderly patient with chest pain refusing treatment, a chronic alcoholic with wrist fracture, and an agitated and aggressive 25-year old woman with drug overdose (iv) communicating with an

elderly male, at home for 3hrs with his deceased partner, and a drug affected, violent adolescent patient with police in attendance, who was later restrained and fell unconscious during transport; (v) attending an adolescent suicide attempt and attending a 49-year old woman living alone who would not leave her dog to go to hospital.

Students who encountered death and drug abuse commented that these experiences were something they would not forget. The reality of the situation seemed to shock these students who had learned related theory and basic skills on campus, but prior to this placement had not come in to such close contact with these intense situations.

"I knew immediately that the patient was deceased, but because I was not at all expecting it, the encounter left me listless and frozen. One of the ambulance officers found me, and helped me back to my senses."

Four students reported encountering overdosing and decreased patients, and were greatly affected by these events; one requested specific post-placement counselling.

A frequent comment related to elderly patients encountered on placement. Students were surprised to see the impoverished living environments of the elderly (e.g. one frail woman unable to afford heating) and their poor physical condition.

"They (the elderly) need a special attention from the health care worker as they are the largest group who access to health care system for medical assistance."

Some elderly patients were acutely unwell, others were regular users of the ambulance service (e.g. alcoholic). The inappropriate use of services as local transport was commented upon by several students.

While many students experienced a range of cases and emergency scenarios, not all students went through the

adrenalin rush of emergency call outs. One student specifically commented on how little action there was during her placement. This is perhaps an aspect of the placement that students need to be made aware of to avoid disappointment.

These placements provided strong material for reflection. This may have only been elicited by the post-placement survey, but many students commented upon their own assumptions, prejudices, response to death and ethical dilemmas:

“I experience the fine line between duty of care and patient autonomy”

“The final callout was very intimidating (drug user) . . . I may be exposed to patients that I don't not feel comfortable with but as a health professional I must act in a professional manner regardless”

Students also revealed frank assessments of their skills and performance on this placement, recognising the need for greater practice.

Inter-professional experiences and insights

Many students described specific interactions between health professionals that they witnessed, generally between a paramedic and another health care worker although they included others (e.g. Police officers) as well. One quarter of comments described general inter-professional interactions such as the team nature of health care, witnessing different perspectives on health care or different roles to increase care for the patient. Five students stated that they recognised specific roles of health care workers, with a further three students commenting on a heightened importance of communication between health care professionals.

Over half of the thirty-three students reported that their greatest learning experience was a better understanding of the role of a paramedic. Students had only a vague awareness of the role of a paramedic prior to the placement; they did not realise how much skill and responsibility they have in rapidly assessing an emergency scene and keeping the patient alive until they reach further care.

“Before my placement with (the) Ambulance . . . I did not fully understand the role of paramedics or how their role interacted with that of GP's and hospital workers.”

Teamwork comments were frequently made. Several students commented on the role of all health care workers to function a team to provide the best care for their patients. Respect for paramedics and other health care workers generally increased as a result of this placement.

“By viewing the paramedics as teammates rather than judges I would have stopped feeling like I was being assessed and instead would have felt comforted by the peer-support that they were actually providing at the time.”

Two students reported the supportive approach by paramedics – showing her how to place the ECG leads, explaining the rhythm and the diagnosis. The other was scared that the

paramedic would ridicule their novice attempts at taking blood pressure, but when they asked for help found their paramedic colleague to be very understanding and supportive.

Improvements for future placements

Overwhelmingly students reported and enjoyable, and more importantly, a valuable learning experience on the placement. They gained deeper personal insights, greater understanding of acute care and inter-professional healthcare during the 10 hour shift. In one student's words:

“The day provided many more experiences than I expected and made me realise a lot about myself at the same time, including how much I have learnt in the past few years as a medical student.”

Discussion

This study reports for the first time the range of experiences that medical students encounter on Paramedic placements. It also highlights issues for other schools to consider when developing these placements. First, the placements provided the intended introduction to emergency medicine. Second, the school needs to prepare students better for the placement and increase post-placement debriefing because the level of exposure to confronting situations was underestimated.

The goals of the placements were to increase student awareness of biopsychosocial factors affecting health and patient centred care, provide opportunities to apply knowledge and clinical skills and gain deeper inter-professional perspectives of the health care system. These outcomes are similar to those noted and achieved by nurses on ambulance places in Ireland (Melby 2001). All students on the placement gained considerable insight into the field and challenges of pre-hospital care – misuse of services, ethics and professional boundaries. They also had the opportunity to apply clinical and communication skills in a range of common and extraordinary situations. Typically students were over-confident with their clinical abilities. This placement gave them significant inter-professional insight into the dynamic interactions between patients and professionals that occur continuously during the care of patients in an emergency setting.

Regular communication between organisers, supervisors is necessary to ensure safety. Orientation for students and Paramedic staff will make clearer our expectations of participation and students clinical abilities. The placement provided many contextual experiences and opportunities to explore the relationship between social factors and health, however we were unaware of the full range of student experiences until after the placement program concluded. Police and Paramedics ensured that students were never in danger, though several reported being afraid. They also provided informal debriefing after each patient encounter, though the School will should take greater responsibility in that area. Overall, closer monitoring and feedback processes are necessary to ensure that we can discharge our duty of care to all involved with the program.

A widely reported request was for “more action” and more “call outs”. Nursing students on ambulance placements expressed considerable frustration with the ‘waiting game’ and the misuse of ambulance services (Melby 2001) whilst medical students feedback on emergency medicine is coloured by the level of excitement they experienced (Celenza 2001). While it is difficult to predict the number of call-outs each student will encounter, students requested weekend night shift placements rather than day-time placements where there is more chance of a call out occurring rather than simple transfers. This strategy may distort the perceptions of pre-hospital care, and provide students with the most confronting experiences. Some of the most challenging experiences however were reported by students on ‘boring callouts and transfers’ where they were surprised to see the different ways and conditions in which patients lived. Educators need to maximise opportunities for a range of experiences and time for reflection within the placement.

There are useful student suggestions for improvement of the placement. A large proportion of students reported that they had no idea of what to expect during the placement. More information on the role of a paramedic and ambulance services in general could be given prior to placement e.g. we propose to offer a paramedic and emergency physician review of a video scenario with a combined class of medical and paramedic students to give greater clarity to the different roles and responsibilities of those involved in pre-hospital care. Ambulance staff may be involved in teaching clinical skills, as well as provide defined skills training on the road e.g. vital signs and ECGs. This may also link up well with the suggestion to use a “patient journey” approach to the placement so the students can follow the patient into the hospital system.

Conclusions

The paramedic placement for medical students was a valuable learning experience for medical students who had opportunities to apply their clinical and communication skills in authentic contexts, to develop an appreciation of inter-professional roles in pre-hospital care and to appraise their own skills and reflect on class room learning. The main improvements to the placement program include orientation and debriefing sessions. The proposal of a patient journey model will also be explored for consideration in future placements to link pre-hospital care, with handovers and Emergency care.

Notes on contributors

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