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Building paramedics, maintaining skilled practitioners

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Building paramedics, maintaining skilled practitioners

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Building and maintaining skilled paramedics is a key component within the health system. Most paramedics never forget their first day as a new graduate or newly qualified paramedic, often with mixed feelings about being 'unleashed on the world'. Many new paramedics will be given the keys to a freshly stocked ambulance and be expected to attend to a vast array of calls ranging from minor to challenging. My own experience was not different to most others, with the first day consisting of two paediatric drowning resuscitations an hour apart followed by a motor vehicle accident entrapment and a fall from height with spinal injury. For the most part, these calls went surprisingly well. However, for those parts that didn’t go as well or could have been better, the clinician is often left with thoughts of ‘what if’ and ‘if only I had…’. Herein lies the importance of quality education followed by an appropriate work environment that fosters good practice.

Medical education is typically delivered across health sciences faculties within higher education institutions. Departments that have traditionally fallen under the banner of health science education include medicine and allied health professions such as nursing and physiotherapy, with paramedicine one of the latest disciplines to join the professions. Despite paramedicine being relatively new by comparison – only having been around for several decades – as a profession it has grown rapidly. However, despite its rapid growth there remain some areas that reflect this infancy. One area is the variation in practice and educational standards, both locally and internationally.

With this in mind, building clinicians to work in these various environments remains a challenge. Medical education has recognised for years that several factors influence the successful performance of any competency. These include the learner’s knowledge of what is required, the component skills required to accomplish this, the correct attitude that displays a confidence and willingness to do what is required, and maintaining a professional environment that supports appropriate behaviour. These core components have been summarised into a taxonomy of learning domains that is still widely recognised today. These components include the cognitive, affective and psychomotor domains.

The cognitive domain involves adult knowledge acquisition and development of intellectual skills. Bloom’s taxonomy outlines how learners ascend through the levels of intellectual skill, from simple recall of information through to evaluating and creating new information (1). Similar models include Bigg’s SOLO taxonomy, which describes levels of increasing complexity in a learner’s understanding of subjects (2). These and other models are used as means of learning, teaching and assessment of the cognitive domain. Teaching strategies are generally comprised of a multi-modal approach, which has been outlined in a previous editorial within this journal (3). While these have proven to be effective models to work with, the execution becomes more of a fine juggling act: balancing the right amount of information needed by the learners, while not overloading them.

The psychomotor domain involves adult skill acquisition. Simply put, this is comprised of physical movement, coordination and use of the motor-skill areas. Several models are widely used throughout medical education the including Simpson (4), Harrow (5) and Dreyfus (6) models of skill acquisition. Traditionally, medical education relied on the Halstedian mantra ‘see one, do one, teach one’, but this has lost favour due to concerns with patient safety (7). Simulation-based training has been offered as a replacement for practising on patients and has widely been accepted as the new method of teaching skills (8). Paramedicine learners progress from performing simple tasks such as oropharyngeal airway insertion in the form of an isolated clinical skill, through to more complex simulation-based scenarios involving critically ill and injured patients in the simulated setting. Learners are expected to achieve competency level within these models, and only progress to proficiency and mastery level after several years of practice as qualified clinicians. Assessing competency can also prove to be a challenging process in education, as assessment rubrics traditionally possess outcomes that may or may not always be reflective of the learner’s competency level. Traditional rubrics also generally possess very stringent quantitative means of assessment. Assessment rubrics that possess both aspects of qualitative and quantitative measures should be considered to gauge an overall perspective of skill competency, as well as possessing characteristics of reliability and validity.
Even with skill acquisition being more reliant on simulation-based teaching, a key component to completing the learner’s competency is performing skills on patients under direct supervision. A learner who has practised their skills sufficiently and is competent in the simulated setting should be well prepared to perform learned skills on patients under direct supervision. This is a key transition point for the learner. Learners must also achieve a set number of skills to safely practise autonomously after they have graduated and qualified. Several challenges exist with attaining these numbers, including low frequency of opportunities or cases to perform these skills, or supervisors who are unwilling to allow learners to ‘practise’ on their licence for fear of reprisal.

Once competency is achieved, skill decay – or ‘de-skilling’ – can occur over time if the skill is not performed frequently. This occurs faster among novice clinicians than it does among the more experienced. With the varying nature of calls attended by paramedics, the opportunity to stagger the level of skill decay through practice becomes a predicament not only for the paramedic, but the patients they attend. Systems can ensure patient and practitioner safety by implementing robust continuous quality improvement systems, which have been shown to improve outcomes (9–11). Simulation-based interventions to avoid skill decay could be a solution to this, and remains an active area of research. Ultimately, the journey from paramedic learner to graduate should be one of constant learning, with robust systems in place to support this process. These systems are vital in ensuring the health and safety of both the patient and the paramedic. The old adage ‘rescuer-safety first’ should always remain our priority.

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References

A review of the literature: the transition of entry-level paramedic education in Australia from vocational to higher education (1961–2017)

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Research

A review of the literature: the transition of entry-level paramedic education in Australia from vocational to higher education (1961–2017)

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Abstract

Introduction
Today in Australia, university degree programs provide the education pathway into the paramedic profession reflecting a more than 50-year process of transition from on-the-job first aid training. The formal organisation of paramedic education began in the early 1960s with the establishment of ambulance service training centres. The factors that contributed to this transition are poorly described when compared with that of paramedics in other parts of the world such as the United States and England. The history of Australian paramedic education is important to capture for the benefit of the profession in Australia and to situate it within a global context of modern emergency medical services. This paper examines the peer reviewed and grey literature to chart the transition of Australian paramedic education from vocational to higher education and uncovers signposts of change leading to this transition.

Methods
Following a systematic search of MEDLINE and CINAHL Plus databases, the university library collection, Google and the websites of Australian ambulance services, Paramedics Australasia (PA) and the Council of Ambulance Authorities (CAA), 31 reports, 12 journal articles and three texts are included in this review.

Results
Advances in emergency medicine, vocational education training sector reform in the 1970s and 1980s, reviews into ambulance services, health workforce reform and the efforts of PA and CAA contributed to the transition to university-based education, development of university paramedic program accreditation standards and, ultimately, progression towards registration and professionalisation. These signposts of change that chart developments in Australian paramedic education however, proved difficult to uncover in the literature.

Conclusion
Unexpectedly, this review finds peak Australian ambulance and paramedic professional bodies perceive difficulty in influencing policy direction that impacts the profession. Absence of thorough and detailed accounts of Australian paramedic education keeps hidden a unique and important history. We invite further research to preserve the history of paramedic education in Australia within the public domain, to assist the profession to understand what went before and to inform its future directions.

Keywords:
paramedic; emergency medical technicians; education; Australia

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Introduction

Today in Australia, university degree programs provide the education pathway into the paramedic profession reflecting a more than 50-year process of transition from on-the-job first aid training. The formal organisation of paramedic education began in the early 1960s with the establishment of ambulance service training centres. Commencing in the late 1970s, the vocational education training (VET) sector accredited education for ambulance officers (as they were then known) and from the late 1990s education for entry-level paramedics began to shift to the university sector.

The Australian experience is similar to what occurred to pre-hospital emergency medical services in England and the United States (US). Since the 1960s the educational preparation requirements of English paramedics and US EMT paramedics has come to include university level programs (1,2). Unlike Australia however, university bachelor degree courses are not the predominant education requirement for paramedics in England and the US (1,2).

This paper examines the peer reviewed and grey literature to chart the transition of Australian paramedic education from vocational to higher education and uncover the signposts of change leading to this transition.

Methods

MEDLINE and CINAHL Plus databases were searched from 1960 to April 2017 using combinations of the terms: ambulance, ambulance officer, paramedic, training, education, graduate, curriculum, history, accreditation, profession, trends, program and Australia. To identify grey literature the same terms were entered into Google search engine with the addition of: federal, national, health, review, inquiry, reform, report and audit. The websites of Paramedics Australasia (PA), the Council of Ambulance Authorities (CAA) and the ambulance services in each Australian state and territory were also searched. The terms ‘ambulance’ and ‘paramedic’ were used to search the university library text collection. To obtain any additional publications not revealed from the search strategy, reference lists of identified reports and publications were hand searched. Inclusion criteria for all searches were publications in English addressing in whole or part Australian entry-level paramedic education, changes to paramedic role affecting education or professional issues arising from changes to paramedic education. Excluded publications dealt with training of non-emergency ambulance staff, volunteers, intensive care paramedics and those addressing paramedic education design, pedagogy or clinical topics. The first author (AB) screened the publications and two authors (FA and HG) undertook a second level review for validation of publications for inclusion. The authors were present at many of the significant events in Australian paramedic education and their lived experience informs some of the discussion. Where possible, individual recollections by the authors are supported using multiple sources in the public domain.

Results

After screening for duplicates, abstracts of 569 articles, synopses of 152 texts and executive summaries of 72 reports were identified. Of these, 12 journal articles, three texts and 31 reports met the inclusion criteria and were reviewed. The results are presented in five sections:

1. Description of Australian paramedic training programs in the VET sector (1961–2002)
2. Transition to university paramedic education programs (1994–2016)

Description of Australian paramedic training programs in the VET sector (1961–2002)

The establishment of ambulance officer training schools in Ambulance Service New South Wales (ASNSW) and Geelong and District Ambulance Service in 1961 mark the start of formal organisation of Australian ambulance service recruit training (3). An interprofessional group of doctors, nurses and ambulance superintendents developed the first Victorian curriculum adapting contemporary hospital-based clinical practice to the pre-hospital setting (3). Nearly a decade later, Queensland established a training school in 1970 and Western Australia (WA) followed in 1974 (Table 1) (4).

All Australian state and territory ambulance authorities ultimately ran their own training schools delivering ambulance officer training as in-house, unaccredited programs. Ambulance medical advisory committees – usually located in the relevant government department in each state and territory, some supported by sessional, ambulance service medical directors; the first being appointed in 1977 (5) – held the responsibility for the development and revision of curriculum.
In the 1960s and 70s the introduction of cardiopulmonary resuscitation (CPR) and development of advanced life support (ALS) and advanced cardiac life support influenced the skills and knowledge requirements of ambulance officers (3,6–8). Western Australia introduced ALS for all ambulance officers from 1978, becoming the first Australian ambulance service to achieve this clinical advance (9). In Victoria, ALS became part of the student curriculum in 1984 (3) and St John in the Northern Territory introduced ALS skills for entry-level students in 1995 (10).

In 1974, the Kangan Inquiry into technical education resulted in the formation of technical and further education (TAFE) as a new national identity with stable national funding that enabled the development of national policies and standards and ultimately the establishment of national awards (11). In 1977, the National Education Committee of the Institute of Ambulance Officers, comprised of medical directors and training managers from each of the state and territory ambulance authorities, developed a national set of learning objectives for the qualified ambulance officer to informed curriculum development and instruction (12). In 1978, the Victorian Ambulance Officers’ Training Centre (AOTC) offered the first formal VET sector certificate program in Victoria (3). In 1979, St John SA Ambulance Education Unit VET sector program commenced (13).

<table>
<thead>
<tr>
<th>Year</th>
<th>Milestone event</th>
</tr>
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<tbody>
<tr>
<td>1961</td>
<td>First training schools established at ASNSW (3) and Geelong and District Ambulance Service, Victoria (3)</td>
</tr>
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<td>1964</td>
<td>South Australian and Tasmanian recruits trained in Victoria (3)</td>
</tr>
<tr>
<td>1970</td>
<td>Queensland Ambulance Officers Training Centre established (4)</td>
</tr>
<tr>
<td>1974</td>
<td>Western Australian Ambulance Officers Training Centre established (4)</td>
</tr>
<tr>
<td>1976</td>
<td>Australian Capital Territory ambulance officers joined Victorian training courses (3)</td>
</tr>
<tr>
<td>1978</td>
<td>Certificate of Applied Science (Ambulance Officer) replaced the in-house certificate program in Victoria (3)</td>
</tr>
<tr>
<td>1979</td>
<td>St John SA Ambulance Education Unit VET sector program commenced (13)</td>
</tr>
<tr>
<td>1983</td>
<td>Certificate of Emergency Care introduced at St John NT; joint training with Northern Territory Community College (14)</td>
</tr>
<tr>
<td>1984</td>
<td>ALS training for Victorian paramedics introduced (3)</td>
</tr>
<tr>
<td>1986</td>
<td>ASNSW introduced five stages of training to prepare: basic life support, intermediate life support and advanced life support paramedics (8)</td>
</tr>
<tr>
<td>1987</td>
<td>Associate Diploma in Health Science (Ambulance Officer) replaced certificate program in Victoria (3)</td>
</tr>
<tr>
<td>1991</td>
<td>Single entity QAS established and Associate Diploma of Health Science introduced (17)</td>
</tr>
<tr>
<td>1995</td>
<td>Advanced Diploma in Paramedic Studies at QAS commenced (18)</td>
</tr>
<tr>
<td>2002</td>
<td>Diploma of Paramedical Science (Ambulance) introduced into NT St John ambulance Associate Diploma (10)</td>
</tr>
</tbody>
</table>

Transition to university paramedic education programs (1994–2016)

In 1994, a Charles Sturt University (CSU) paramedic degree conversion program for currently employed paramedics, developed in collaboration with ASNSW, heralded a transition to university-based paramedic programs in Australia (19). Other university programs emerged rapidly (Table 2). In 1995, Victoria University (VU) introduced its degree conversion program (20,21) and in 1998, CSU (19) and Flinders University in partnership with South Australian Ambulance Service (SAAS), offered pre-employment paramedic degrees (13,21).
In 1999, the Victorian Department of Human Services closed the AOTC transferring ambulance officer education to Monash University (22). In partnership with Ambulance Victoria (AV) Monash began offering a post-employment diploma program and conversion bachelor degree in 2000 and a pre-employment bachelor degree in 2004 (21).

Transition to university education occurred later in other states: St John Ambulance WA in association with Edith Cowan University (ECU) introduced a Bachelor of Science (Paramedical Science) in 2004 (23); Queensland University of Technology graduated its first paramedics in 2007 (17); and the University of Sunshine Coast enrolled its first students into a degree program either in 2007 (17) or 2008 (21). A recommendation for continued transition from ambulance service training to university education in the 2007 Queensland Ambulance Service Audit Report provides evidence of perceived benefit of highly trained university-prepared paramedics as providers of sophisticated and advanced patient management (17). In 2011, St John NT entered into a partnership with ECU aiming to offer a Bachelor of Science (Paramedical Science) from 2012 (24).

In addition to undergraduate degrees, double degrees with nursing introduced at CSU in 2002 (19) and Monash University in 2007 and a Graduate Diploma of Paramedicine at the University of Ballarat in 2009 (21), provided alternate paramedic study pathways (Table 2). The CAA website indicates that in November 2017, 17 Australian universities offered paramedic entry-level degrees (Table 3) (25).
The submissions of the Australian College of Ambulance Professionals (ACAP – now PA) and CAA to the Productivity Commission supported an enhanced paramedic role (27,28). The CAA had already commissioned a review of possible expanded roles for rural paramedics in ASNSW and QAS (28). This 2006 review proposed a Rural Expanded Scope of Practice model for paramedics that encompassed community engagement, emergency response, scope of practice extension and primary health care (29). The core attributes would be integrated into undergraduate curricula and form the basis for extended skills training at postgraduate level (29).

Furthering the Productivity Commission’s agenda, the 2008 National Health and Hospitals Reform Commission (NHHRC) report, A Healthier Future for All Australians (30), proposed the potential for an extended scope of practice role for paramedics, supported in submissions from CAA (31) and PA (32). In 2009, the Australian Health Ministers Advisory Council (AHMAC) National Health Workforce Taskforce consultation document ‘Clinical Training: Governance and Organisation’, proposed a new national agency (Health Workforce Australia (HWA)) to manage initiatives concerning health workforce clinical education (33). Of note, paramedics were excluded from the listing of health disciplines covered in this document as the report only considered medicine, nursing, dental and the allied health disciplines that did not include paramedics (33). However, it did accept submissions from three unnamed ambulance services and the Department of Community Emergency Health and Paramedic Practice at Monash University (33). In response, ACAP noted that this exclusion highlighted the continued lack of acknowledgement of the critical role paramedics play in the provision of health care and argued that AHMAC should recognise paramedics as allied health professionals and acknowledge their clinical training needs (6). That ACAP submission mentions the rapid growth of university-based paramedic programs and introduction of a national course accreditation process (6).

Ultimately the HWA conducted the Expanded Scope of Practice Program (ESOP) to explore the potential for expanding paramedic roles and related education program development as part of its broader National Health Workforce Innovation and Reform Strategic Framework for Action 2011–2015 (34). The final project report dealt exclusively with the successful pilot of ESOP roles for paramedics (35). The SAAS and ECU developed training pathways, however these were at postgraduate level (35).

In New South Wales, the 2008 Performance Review Ambulance Service of NSW report described trials of expanded practice roles for NSW paramedics which aimed to reduce transport of low acuity patients to emergency departments but lacked any information about educational preparation needed for such new role requirements (36). Table 4 summarises the genealogy of all reports.

### Table 4. Genealogy of reports related to health and paramedic workforce reform (2005–2014) identified from the literature

<table>
<thead>
<tr>
<th>Year</th>
<th>Milestone report</th>
</tr>
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<tbody>
<tr>
<td>2005</td>
<td>Australia’s Health Workforce Productivity Commission report (27)</td>
</tr>
<tr>
<td></td>
<td>ACAP response to Productivity Commission (28)</td>
</tr>
<tr>
<td></td>
<td>CAA response to Productivity Commission (29)</td>
</tr>
<tr>
<td>2008</td>
<td>‘A healthier future for all Australians’ NHHRC interim report (31)</td>
</tr>
<tr>
<td>2009</td>
<td>‘Clinical training: governance and organisation’ National Health Workforce Taskforce report (32)</td>
</tr>
<tr>
<td></td>
<td>‘Clinical training: governance and organisation’ ACAP submission (6)</td>
</tr>
<tr>
<td>2014</td>
<td>‘ESOP program evaluation: extending the role of paramedics sub-project. Final report’ HWA (34)</td>
</tr>
</tbody>
</table>

### Development of university education standards and external accreditation (1996–2010)

Before transitioning to higher education, Australian state and territory TAFE authorities required paramedic education programs to meet VET sector competency standards and accreditation requirements. For health professional programs offered at Australian universities, the professions themselves, through external accreditation agencies such as the Australian Medical Council and Australian Nursing and Midwifery Accreditation Council, determine the educational competency requirements and accreditation standards. The start of the transition to higher education for paramedics in 1994 occurred in the absence of such standards and accreditation requirements. In May 1996, a national ambulance symposium held in Adelaide agreed on the need for paramedic education standards and a national education body (Table 2) (37). In 1999, a steering committee recommended that the Convention of Ambulance Authorities (now CAA) form an Ambulance Education Committee (AEC) to address the key educational issues facing the Convention (12). An AEC would provide a national voice on matters affecting paramedic education and enable self-regulation of the ambulance industry to respond proactively and influence progress and change within VET and higher education sectors (12). An AEC would facilitate the development of national standards for endorsing training organisations and address the need for external accreditation of education programs to ensure that graduates of paramedic education providers met the needs and expectations of both the industry and the profession (12). Finally, an AEC would promote national and international portability of paramedic qualifications (12).
In 2001, the CAA formed an interim AEC that tabled a proposal for external accreditation of university courses. The formation of the AEC in 2004 enabled the committee to take on the responsibility for developing the external accreditation process (37). In 2010, the CAA published Guidelines for the Assessment and Accreditation of Entry-level Paramedic Education Programs and the Paramedic Professional Competency Standards Development Report (38,39). The following year PA, intending to support the design of paramedic curricula and course accreditation, published the Australasian Competency Standards for Paramedics (40).

**Paramedic registration (2003–2017)**

Paramedic registration is a recurring topic in recent literature. In 2003, PA supported registration of ambulance practitioners in its submission to the Victorian Government’s review of health practitioner regulation (41). The 2008 Performance Review of ASNSW argued that the trend towards university-based paramedic education is one of the factors increasing pressure towards registration of paramedics (36). In 2009, the St John Ambulance Inquiry, Report to the Minister for Health in WA recommended pursuing paramedic registration to ensure high quality paramedic education (42). Stemming from that recommendation, in 2011 AHMAC released a consultation paper Options for Regulation of Unregistered Health Practitioners (43) and in 2012, an Options for Regulation of Paramedics consultation paper (44). PA’s submissions to these consultation papers recommended national registration (45,46) but failed to influence the final AHMAC report (47). With further lobbying from PA, on 6 November 2015, the Council of Australian Governments (COAG) Health Council agreed to proceed to enable the inclusion of paramedics into the National Registration and Accreditation Scheme (48). On 19 October 2017, the COAG Health Council announced appointees to the inaugural National Paramedicine Board of Australia (Table 5) (48).

**Discussion**

The chronology of paramedic education in Australia from the 1960s while incompletely described in the literature, highlights non-uniform development of VET sector training programs and similar discontinuous transition to university degrees across Australia. The overall trend throughout this period though, reflects an advancement of qualification levels. Ambulance medical directors played a key role through translation of pre-hospital research and advances in emergency medicine to paramedic education programs that continued until transition to university.

Other events that shaped pre-hospital qualifications and training in the late 1970s and 80s included reform of the training sector. Through the 1980s VET sector reform developed a consistent nomenclature for TAFE awards and national core curricula (11). In 1989, the Dawkins report heralded a transition to a national competency framework that supported portability of qualifications, an Australian Standard Framework and reclassification of previous qualifications against the new standard (11). The Australian National Training Authority established in 1992 led improvements in the VET system based on developing industry specific competency standards and training packages (11). The VET sector training reform during this period provided an opportunity to advance training of ambulance officers (as they were then called) as presented in Table 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>Milestone report</th>
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<tbody>
<tr>
<td>2003</td>
<td>‘Submission to the Review of Health Practitioner Regulation in Victoria’ ACAP Standards Committee (41)</td>
</tr>
<tr>
<td>2008</td>
<td>‘Performance review Ambulance Service of NSW’ (36)</td>
</tr>
<tr>
<td>2009</td>
<td>‘St John (WA) Ambulance inquiry: report to the Minister for Health’ (42)</td>
</tr>
<tr>
<td>2011</td>
<td>‘Options for regulation of unregistered health practitioners’ AHMAC consultation paper (43)</td>
</tr>
<tr>
<td>2011</td>
<td>‘Options for regulation of unregistered health practitioners. Consultation response’ PA (45)</td>
</tr>
<tr>
<td>2011</td>
<td>‘The forgotten health profession’ PA (50)</td>
</tr>
<tr>
<td>2012</td>
<td>‘Options for regulation of paramedics’ AHMAC consultation paper (44)</td>
</tr>
<tr>
<td>2013</td>
<td>‘Options for regulation of unregistered health practitioners’ AHMAC final report (47)</td>
</tr>
<tr>
<td>2015</td>
<td>COAG Health Council Communiqué advising paramedic registration (48)</td>
</tr>
<tr>
<td>2017</td>
<td>Announcement of appointees to the inaugural National Paramedicine Board of Australia, 19 October 2017 (48)</td>
</tr>
</tbody>
</table>

While well-documented reform occurred in the VET sector, events driving the transition of undergraduate paramedic programs from the VET sector to higher education proved difficult to uncover. In South Australia, the SAAS Ambulance Education Unit continued to run its VET program through shared facilities at Flinders University until 2006 (13) and in Victoria, the phasing out of pre-employment programs began in 2006 with all recruitment into AV occurring through the post-employment pathway since 2007 (21).
Other than the key events described in this paper, the literature, while noting the transition, provides little additional documented evidence about the reasons for the transition of paramedic education to higher education that has occurred nation-wide. The transition to university programs represents a cost shift from state government budgets where ambulance officers undertook training as paid employees, to federally funded education programs with students self-funding their education before employment. Lord contends the cost benefits to ASNSW of university education posed a driver for the development of the degree at CSU (19). While a benefit, it is unlikely to be the major driver as NSW Ambulance still offers a pre-employment VET program for trainee paramedics (49).

The literature search uncovered no reviews specifically enquiring into paramedic education that could provide insights to the development of university paramedic programs. We have knowledge of state-based reviews in Victoria conducted between purchasers of ambulance training and providers, however accessing these in the public domain proved impossible.

The advances in paramedic training and education and changes to curriculum inherent in transitioning from VET to university sector are due to changes in paramedic scope of practice, increased responsibility for accurate clinical decision making and treatment such as being able to treat but not transport (21) as well as changes in community expectations of paramedic care (37). While this paper is able to uncover these signposts of change in leading to university degree education of paramedics (Figure 1), the lack of major reports dealing wholly or in part with the story of paramedic education in Australia demonstrates a novel circumstance when compared with the US and England. In the US, federal and emergency medical services (EMS) organisation reports document the events that influenced the development of EMS education (1). In England national policy directions and ambulance service audits and reviews clearly document the drivers that led to the development of university education for paramedics (2). Unlike Australia however, a university bachelor degree level qualification is not the main pathway to paramedic qualification in the US or the England (1,2).

**Paramedic professionalisation**

Moving from the VET sector to higher education required the establishment of new standards and processes for accrediting university-based paramedic courses. Now developed, this process identifies the educational standards expected of graduates from entry-level paramedic programs and aims to ensure quality higher education paramedic programs (38,39).

The development of professionally accredited university undergraduate and graduate programs enhances professionalisation and provides the added benefit of spotlighting the role and capabilities of paramedics to other health professions. However, regulation through registration provides the central platform for the development of the paramedic profession (21). Paramedic registration presents as a recurring topic in the inquiries and reviews into ambulance services in NSW (2008) (36) and WA (2009) (42), and is a major focus for PA, which nurtured and readied the profession and lobbied governments for paramedic registration since at least 2003 (41). An idiosyncratic struggle to obtain paramedic registration exists in Australia when compared to the US and England where longstanding processes are in place for registering paramedics (1,2). When introduced, paramedic registration will form the link missing between education standards and accreditation processes.

**Paramedic voice**

A surprising finding in the literature exposes the perception of CAA and PA that they are not heard by government at a national level. CAA's response to a 2008 NHHRC report included recommendations for a stronger voice in policy direction affecting paramedics (31). 'The forgotten health profession', a commentary highlighting the omission of paramedics and paramedic services from national health care policy considerations released by PA in 2011, echoed similar concerns (50).

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**Figure 1. Paramedic education transitions**
This experience contrasts with that of EMS in the US and Ambulance Trusts in England [AUTHOR: UK?] and may be explained by the centralisation of policy setting for pre-hospital emergency service in those countries. In the US, the National Highway Traffic Safety Authority within the Department of Transport holds legislated responsibility for EMS services including training and licensing standards (1) and in England [AUTHOR: UK?] the National Health Service is the central authority for ambulance services emergency pre-hospital care (2).

Conclusion

Discovering the chronological narrative describing the transition of Australian entry-level paramedic education from VET to higher education reveals a difficult path to uncovering its evolution, development and growth. Inquiries and reviews into ambulance services, federal government initiatives and some peer-reviewed literature chart limited signposts of change that documents a superficial and incomplete history. An unexpected finding from the analysis discloses how Australian peak ambulance and paramedic professional bodies perceive a lack of consultation and an inability to influence policy direction impacting on the profession. Without a thorough account of Australian paramedic education a unique and important history remains hidden. We invite future agents of change within ambulance services to further our research to preserve the history of paramedic education in Australia within the public domain, to assist the profession understand what went before and to inform its future directions.

Limitations

Potential selection bias exists as many documents remain unobtainable, and some available reports may have been selectively preserved. Lack of resources in the public domain necessitating recollection of author lived experiences contributes to potential memory bias. Where possible this has been countered by checking recollections using multiple sources including secondary hand search of the bibliographies of papers and reports identified from our literature search.

Conflict of interest

The authors declare they have no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

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Preparing for the real thing with practice interviews: a graduate paramedic perspective

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Research

Preparing for the real thing with practice interviews: a graduate paramedic perspective

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Abstract

Introduction
Behavioural interviews are a critical component of the job application process for ambulance services in Australia. They involve role specific open-ended questions that are designed to test an applicant’s skills, eligibility and experience. It is a process that is standardised and can be practised to increase familiarity and performance. Existing literature supports the benefits of practice interviews ahead of real interviews to improve applicant performance and subsequent employment success. The objective of this study was therefore to examine paramedic graduates’ perceptions on the value of participating in practice interviews before seeking employment with an ambulance service.

Methods
Students enrolled in the Bachelor of Emergency Health (Paramedic) at Monash University in Victoria took part in a cross-sectional pilot study. Three paper-based surveys were created to assess the value of practice interviews. Both quantitative and qualitative methods were used.

Results
Fourteen (n=14) students participated. All participants agreed or strongly agreed that practice interviews would help them gain employment. All participants perceived that practice interview helped improve their confidence and preparation for their actual interview.

Conclusion
Practice interviews were found to be a positive and worthwhile undertaking. They increased confidence and improved preparation through practise and feedback. Participants agreed that they were valuable and perceived that they led to improved performance in their real interviews and subsequent employment success.

Keywords:
practice interviews; mock interviews; paramedics; paramedic students; behavioural interview; employment success

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Introduction

Students attend universities and colleges worldwide in the pursuit of knowledge and skills which will ultimately lead them to greater employment prospects and higher salaries (1). Gaining employment for university graduates in Australia is highly competitive (2). Employers of paramedic graduates, which include national, international and private providers of emergency and non-emergency services, have individual recruitment procedures and application processes. These can include assessment of student grades, clinical placement reports, work and volunteer experience, psychometric testing and group interviews (3-5). Many employers also require applicants to attend an individual behavioural interview.

Behavioural interviews are designed to measures an applicant’s eligibility and skills for a particular role based on the systematic use of job specific and open ended questions (6). The interviewer is able to draw on all information provided when undertaking their assessment, including what an applicant has done, or how they have behaved in a real situation, rather than answering a hypothetical question (6). These questions are also based on the principle that past behaviour is a strong predictor of future behaviour, enabling the tone and quality of the response to indicate the individuals expected behaviour should they be employed (7). Through focussing on past oriented questions; such as ‘provide an example when you have demonstrated …’ the interviewer is able to learn about a particular skill or competency (7). At the same time the applicant is also able to demonstrate their communication abilities and provide insight into their own background and experiences (8).

The identification and evaluation of pre-defined skills is an important element of this interviewing technique. It serves to both guide the line of questioning for the interviewer, whereby questions posed correlate strongly to the relevant skill, and also provides some degree of uniformity of the applicants responses so they can later be compared (6). This ensures a standard of measurement where the interviewer remains objective in their decisions while also documenting the justification for an applicant to be selected above other candidates (6). Therefore, the demonstrated benefits of behavioural interviews include a better quality of information gathered from candidates, greater consistency of interviewing, an opportunity for applicants to better communicate and receive feedback, thereby leading to overall improved selection decisions for employers (9).

A study of paramedic students concerns about gaining employment revealed that the behavioural interview process was a major impediment for gaining employment within an ambulance service (10). Students provided testimonies stating that behavioural interviews are subjective and limited, and they believed that the selection process was flawed (10). Other interview apprehensions that students held were concerns about gaining employment within an ambulance service at all after graduation due to the number of applicants far exceeding prospective job numbers (10). This impacts on confidence, interview performance and anxiety levels. Given these perceived difficulties from the students, while understanding that interviews are commonly utilised within ambulance service recruitment processes, the best way to overcome this is through thorough preparation and practise. One such strategy is engaging in practice interviews.

Evidence supporting the value of practice or ‘mock’ interviews towards gaining employment has been reported in many fields. A study reviewing the best practices for preparing business students ahead of job interviews demonstrated that interview practice boosts students confidence and strengthens their interview performance (11). This correlates with many other sources who have equally provided commentary towards the benefits of practice interviews and their value towards successful interview outcomes (12-14). Within the field of health care, a study evaluating the introduction of an interview preparation day to third year nursing students reported positive and favourable results about its implementation and relevance (15). Of the 88 participants 69 (78%) were successful in their first employment interview following a day of practice interviews and preparation (15). Similarly, a study of final year Australian medical students found that 98% of participants agreed or strongly agreed that their practice interview session was helpful for their upcoming internship interviews (16). With 92% agreeing or strongly agreeing that they felt more confident about their real interviews after having practised the format and questions in a simulated environment (16). These findings were echoed by senior medical students who were uncomfortable and lacked confidence before the introduction of practice interviews (17). On completion of practice residency interviews, students reported that their stress had been reduced while confidence in skill sets, ability to receive feedback and familiarity with the interview process, had all increased (17).

The objective of this study was therefore to examine paramedic graduates’ perceptions of the value of participating in practice interviews before seeking employment with an ambulance service.

Method

Design
A cross-sectional pilot study utilising paper-based questionnaires.

Participants
Third year students enrolled in the Bachelor of Emergency Health (Paramedic) degree at Monash University, Victoria (Australia) were eligible to take part in this study.
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Australasian Journal of Paramedicine: 2018;15(2)

Instrumentation
Three questionnaires were devised by the research team to assess the value of practice interviews for graduating paramedic students. The first pre-practice interview questionnaire involved standard demographic questions and seven Likert scale based questions with five choices (1=strongly disagree to 5=strongly agree). The second post-practice interview questionnaire closely mirrored the first with two additional questions and a numerical scale for the student to rate their own interview performance (1=lowest to 10=highest). The third questionnaire consisted of three free text questions.

Procedures
The interview questions and procedures were designed by the research team in consultation with the university careers consultant. The interview panel consisted of three trained and experienced interviewers. Students were invited to complete three surveys: the first before a practice interview; the second after a practice interview; and the third 10 months after the practice interview as graduates. The research purpose and procedures were explained and it was made clear that participation was voluntary. Completed surveys were collected by an independent member of staff.

Data analysis
The SPSS program (Statistical Package for the Social Sciences Version 23.0, IBM Corporation, Armonk, New York, U.S.A.) was used for all statistical analysis. Descriptive statistics were used to describe demographic details. A Wilcoxon Signed Ranks test was used to compare the non-parametric results. A thematic analysis based on a six step approach: data familiarisation, coding, identifying themes, reviewing themes, defining and naming themes, was conducted by the two authors (Ross and Moffatt) (18). Consensus on the final themes and definitions was reached by discussion.

Ethics
Ethics approval for the study was granted by the Monash University Human Research Ethics Committee (MUHREC).

Results
Demographics
Of the 45 students eligible for this study 14 participated (n=14). The participants were predominately aged less than 23 years (M=22.2, SD=1.67) and female (n=8).

Participants agreed that this practice interview would help them gain employment before the interview (Md=4; IQR=3-5) and after the interview (Md=5; IQR=4-5; p=0.02). Full pre- and post-interview response results are shown in Table 1.

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-interview median (IQR)</th>
<th>Post-interview median (IQR)</th>
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<tr>
<td>1. Practice interview preparedness</td>
<td>3 (2–3)</td>
<td>2.5 (2–3.25)</td>
</tr>
<tr>
<td>2. Confidence</td>
<td>3 (2–3.25)</td>
<td>3 (2–4)</td>
</tr>
<tr>
<td>3. Real interview preparedness</td>
<td>5 (4–5)</td>
<td>5 (5–5)</td>
</tr>
<tr>
<td>4. Helpfulness towards employment</td>
<td>4 (3–5)</td>
<td>5 (4–5)</td>
</tr>
<tr>
<td>5. Question expectations</td>
<td>4 (3.75–4)</td>
<td>4 (3–4)</td>
</tr>
<tr>
<td>6. Understanding of interview structure</td>
<td>4 (4–4)</td>
<td>4 (4–4)</td>
</tr>
<tr>
<td>7. Advantageous to practice interviewing</td>
<td>5 (4–5)</td>
<td>5 (4.75–5)</td>
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</table>

Participants also reported strong agreement that the practice interview feedback was valuable (Md= 4.93) and the feedback would help them prepare better responses in preparation for their real interview (Md=4.93). Following the practice interview participants rated their own performances on a scale of 1 to 10 (M=6.21, SD=1.47, min=4, max=9).

The third survey, conducted 10 months after the practice interviews, had a response rate of 85.7% (12/14). Of these, 100% had undertaken an employment interview with an ambulance service. Eleven of these 12 (91.6%) had been successful in their interview and had received offers of employment; all commencing work in 2016. All 12 respondents affirmed the value of the practice interview and perceived that it had helped them prepare for their actual interview. In response to the free-text questions about how participants felt the practice interviews helped them prepare for their real interview, the following themes were prominent:

- Forewarning/exposure to a realistic situation/environment led to feelings of being prepared
- Practice interviews increased their confidence ahead of real interviews
- Practise provided beneficial insight into the behavioural questions that may be asked in the real interview
- Practise provided insight into structure and format of a panel interview
- Constructive feedback from the practice interviews guided and focused areas to improve and work on.
Discussion

This research indicates that paramedic graduates have a positive perception of the value of practice interviews before seeking employment with an ambulance service. While a pilot study with a small self-selected sample size the majority of participants received employment offers. They indicate that participation in practice interviews improved their preparation and confidence, and potentially contributed to their ultimate success in securing a job.

Participants strongly agreed before the practice interview that it would help them gain employment. Students’ perception of the helpfulness of this practice increased upon completing their interview. Qualitative results also show that conducting practice interviews were perceived to have a beneficial impact by graduates as discussed under the following themes.

Confidence
In many societies self-confidence is widely regarded as a valuable personal asset, and a strong belief in oneself is critical to achieving personal success (19). When asked how the practice interviews helped prepare participants for their real interview, graduates stated that their confidence levels were increased significantly. This aligns closely with other research that found confidence to be a main outcome from conducting practice interviews with medical students (16,17). Increased confidence was viewed as a positive and advantageous personal characteristic ahead of real interviews and was related to improved performance (16,17). Other literature states that confidence in one’s own abilities can enhance motivation towards a goal; this then leads to improved performance and self-esteem and therefore a greater likelihood of achieving success (19). It can then be said that raised confidence, without extending into over-confidence (19), ought to have an advantageous effect upon job applicants and their probability of receiving a job offer. Therefore, strengthening self-confidence and self-esteem through practice interviews should place the applicant in a better position to be successful.

Preparation
In many fields it is understood that good preparation is the key to interview success (20). Participants reported that taking part in interview practise led them to feeling more prepared for their actual interviews. This sense of preparation was articulated in many ways but commonly in areas of the interview that they had no prior exposure to or experience in. These included: the initial introduction/greeting with the interviewers, the two/three person panel format, the STAR (situation, task, action, result) method of responding to behavioural questions, and emotional states such as nervousness, pressure or confidence. This forewarning to key elements of the interview was largely appreciated and only possible through taking part in the practice interviews. Participants also stated that the practice interviews afforded them the opportunity to prepare responses and situational examples to potential questions that would be asked. This was valuable as they were able to refine or pre-script examples in preparation for the real interview. Other research similarly supports the benefits of preparation, academic or otherwise, as an effective method for students to be more successful at whatever they do after graduation, including gaining employment (15,21).

Feedback
An ability to properly receive and make necessary adjustments to feedback is an example of continuous learning and improvement (22). These are important skillsets and are specifically sought by ambulance services when recruiting graduate paramedics (3), and therefore of direct concern to students. Feedback given to participants following practice interviews was found to be highly valued, helpful and enabled them to prepare better responses for their interviews. This is supported in the literature which suggests feedback helps reduce student stress and increase their feelings of being prepared (17). One study found that 90% of medical students who participated in mock interviews before their residency interviews found the feedback helpful, realistic and helped them identify areas that needed to be worked on (23). Feedback is an important diagnostic tool and helps identify areas of strength or weakness so that they may be improved on for the future and as such increase overall performance (22). Participants provided free text commentary attesting to their appreciation for personalised feedback, regarding it as positive and beneficial. It allowed the individual to experience the assessment and appraisal that comes with a real interview without the consequences. This indicates that students perceive feedback on their performance in the practice interview as important in their preparation for the real thing.

Limitations

The small sample size may not have been representative of the overall cohort. While theses participants reported increased confidence, this is not generalisable to all paramedic graduates. The students who volunteered may have been high achieving students who would have gained employment regardless. Students who did not participate in the study were not surveyed; therefore the success rate of students who did not attend practice interviews, but gained employment, is unknown. Past and further interview experience of students beyond that experienced during the practice was also not known and may have affected the results.

Conclusion

Practice interviews were perceived as a positive and worthwhile undertaking by paramedic students. Student confidence improved and preparation was enhanced through practice and feedback. Most of those who participated successfully gained employment and regarded the practice interviews as a contributing factor. The results of this pilot study support the use of practice interviews in the preparation of students before attending real interviews in the future.
Conflict of interest

The authors declare they have no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

Acknowledgements

The authors would like to thank the students who participated in this study and members of the practice interview panel for their time and expertise.

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8. Health Governance Report. If recruiters don’t ask appropriately, they don’t have to tell (behavioral interviewing, recruitment of physicians, healthcare industry). April 2007.
Young adults' perception of mandatory CPR training in Australian high schools: a qualitative investigation

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Edith Cowan University, Western Australia

Brennen Mills  
Edith Cowan University, Western Australia

Lisa Holmes  
Edith Cowan University, Western Australia
Research

Young adults’ perception of mandatory CPR training in Australian high schools: a qualitative investigation

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Abstract

Introduction
Bystander cardiopulmonary resuscitation (CPR) can be performed by any member of the public who witnesses a cardiac arrest and has the knowledge, training and skills to perform it. Even though bystander CPR has been shown to greatly improve the victim’s chance of survival, its training and performance rates are alarmingly low.

Methods
One potentially effective intervention to tackle this issue is to implement mandatory CPR training programs in high schools. We undertook in-depth qualitative interviews with 28 recent Australian high school graduates. The interviews were transcribed and then analysed, with participants’ answers used to draw conclusions on the acceptability of mandatory CPR high school training.

Results
Results suggested those that had undertaken basic first aid training in high school would be more open and confident to perform bystander CPR. Among those who had not undertaken training, cost and access were identified as the key barriers. Regardless of whether participants had or had not previously undertaken training, they understood the importance of CPR for the treatment of cardiac arrest victims.

Conclusion
Among our sample, there was overwhelming support for the concept of mandatory CPR training being implemented in high schools. Should such a program be applied, there is the potential for this to have an impact on bystander CPR provision, and hence cardiac arrest survival rates, within the wider Australian community.

Keywords:
high school CPR; cardiopulmonary resuscitation; bystander intervention; CPR training uptake; qualitative interviews

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Introduction

Bystander cardiopulmonary resuscitation (CPR) is CPR performed by members of the public in an out-of-hospital cardiac arrest. Research suggests that survival of victims of out-of-hospital cardiac arrest is greatly improved through the provision of bystander CPR, demonstrating the ability of layperson to impact the survival rate of cardiac arrest victims (1). Typically, the frequency of bystander CPR provision is low; a Japanese study analysed a total of 4068 adult victims of out-of-hospital cardiac arrest which were witnessed by bystanders and noticed 72% of these victims did not receive bystander CPR (2). Furthermore, in the United States (US), Sasson et al (3) report only one-quarter of out-of-hospital cardiac arrest victims receive bystander CPR. Layperson resuscitation can serve as a bridge between cardiac arrest and the arrival of emergency medical services and has been suggested to triple survival rates of out-of-hospital cardiac arrests (4).

In order to improve bystander CPR commencement rates, barriers to CPR training and initiation uptake must be identified. Drager (5) suggests the complexity and cost of first aid training can contribute to a lack of uptake. Drager (5) also notes bystander panic and discomfort to be major contributing factors to CPR not being initiated during a witnessed cardiac arrest. Sorens and Marteen (6) suggest these issues can be alleviated by enhancing confidence through adequate training, an objective that could be greatly assisted through a mandatory CPR training program within secondary schools.

High school CPR training may be beneficial in laying the skill foundations and sense of social obligation to remaining skilled in its provision. Wang, Ma and Lu (7) argue that by exposing individuals to this form of training early, people will be more inclined to seek follow-up training and skill retention courses, as they have been educated about the importance of CPR training from a young age. A review of the literature has found the principle of CPR training in high schools has been applied internationally. This includes studies in the US (4,6), The Netherlands (8) and Norway (9), all of which have resulted in an overwhelmingly positive response from the students who had undertaken mandatory CPR training as part of their high school education.

These aforementioned studies throughout Europe and the US have provided data suggesting mandatory implementation of CPR training in high schools is looked on favourably by students and can increase confidence to intervene in situations when the need arises. However, we were unable to locate any data pertaining to Australian perceptions of this concept. Obtaining data surrounding the perceptions of Australian youths toward mandatory high school CPR programs could provide a catalyst for implementing such programs locally. Should it be discovered that the younger Australian demographic are supportive of mandatory implementation of CPR training in high school, this could provide the first-step toward influencing education policy makers across the country in a trend that has clearly been sparked internationally.

Methods

Study design
The study consisted of cross sectional data obtained via in-depth qualitative interviews. All interviews were de-identified, transcribed and then analysed based on recurrent themes found throughout participant responses.

Participants
The study consisted of young Australians aged 18–21 years who had graduated high school. Recent high school graduates were chosen as the target group for the research – as opposed to current high school students – due to difficulties surrounding ethical approval for research with those aged less than 18 years. Further, it was felt that recent graduates would be better equipped to reflect on their entire high school career, as opposed to current students who had not yet graduated.

Persons working or studying within a health care setting were deemed ineligible to take part in the study, as we felt such backgrounds may not provide a true representation of the ‘average’ high school graduate. It was felt those individuals with a work or study affiliation to health care would perhaps have a different inclination to the mandatory CPR in high school concept, compared to those with no health care affiliation, particularly as many health care services encourage their affiliates to undertake CPR training on a regular basis. Those who had undertaken some form of CPR training in the past but did not work or study in the health care discipline, remained eligible to participate in the study. To recruit participants, personal contacts of the study investigators were contacted via social media or email. A total of 28 in-depth interviews were conducted.

Ethics

The research received ethics approval from the School of Medical and Health Science and School of Science Ethics Subcommittee from Edith Cowan University (#16022).

Procedures
One-on-one, face-to-face interviews were undertaken in a quiet room at Edith Cowan University Joondalup campus. Before commencement of the interviews, participants were given a short information letter outlining the study, its aims, and how and why their answers would be used. Informed consent was gained through the participants signing a consent form before the interview proceeded. A semi-structured interview guide, outlining general themes to be touched on throughout the interview, was used to guide researchers and facilitate discussion. All interviews were audio-recorded on dicta-phone.
Data analysis
All interviews were de-identified and transcribed verbatim. Statements extracted from transcripts of the interview discussions were sorted into recurrent themes, using the method prescribed by Owen (10). Further, interviews were randomly split into two halves, containing 14 transcripts each. Two groups of two researchers independently undertook thematic analysis of each of their 14 prescribed interviews, meaning that each transcription underwent analysis by two separate researchers. Pairs independently analysing the same 14 interviews first met to corroborate findings, reaching consensus on interpretation of themes. Following this, a 4-hour meeting was held between all four researchers, identifying similarities and differences noted between their respective transcription sets. Overlapping of themes were mapped, before reaching final consensus of identification of themes. Benefits of multiple coding in the limiting of researcher bias in qualitative research has been discussed in previous publications (11,12).

Results
A total of 32 participants were approached to participate in an interview (19 women and 13 men). Of these, four declined to participate (four men). Nineteen women and nine men completed an interview, with the mean age of participants of the study being 20 years (SD=1.1). Eighteen high schools were represented by at least one participant (11 public schools, seven private schools). See Table 1.

Table 1. Demographic breakdown of participants by gender and public versus private school

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<tr>
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<th>Men</th>
<th>Women</th>
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<tr>
<td>Public</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Private</td>
<td>6</td>
<td>7</td>
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While the core focus of interviews was participants’ opinions towards the introduction of mandatory CPR training in high schools, a number of related concepts were also discussed. These included barriers to CPR delivery and training, feeling comfortable performing CPR, opinions on CPR and its importance, and opinions on the introduction of mandatory CPR training in high school. Just over half the study sample (17 of 28) had some training in CPR, of which each had completed their training voluntarily through training organised as part of their secondary schooling.

Barriers to CPR: delivery and training
Throughout the course of the interviews, several barriers to both learning and performing CPR were discussed. The overwhelmingly predominant deterring factor participants cited for not being comfortable with performing CPR was feeling they didn’t have the skills and knowledge to correctly perform the technique, which may result in further harm to the victim. It seemed that while the ‘willingness’ to intervene was largely present, doing so without the proper training increased discomfort. This belief was more prevalent among those identifying they had not before undertaken CPR training. Some quotes demonstrating these concerns are listed in Table 2.

Table 2. Quotes by participants on concerns surrounding CPR provision

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<tr>
<td>‘I really would be worried about hurting them further and also just putting them at risk more than what they already are.’</td>
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<td>‘That would be my biggest fear towards like, actually doing the CPR. Would be that I was to do it wrong and hurt them more or put their lives in danger.’</td>
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<tr>
<td>‘Just probably not having ever had to have done it before, never having to actually respond in a situation like that, that would be the main thing.’</td>
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<tr>
<td>‘A lot of people don’t have the knowledge to actually do anything. As well as the fear of doing something wrong and stuffing up and being the reason for someone’s death.’</td>
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The most heavily cited factor that participants attributed to not undertaking CPR training, or not having maintained their skills since first voluntarily undertaking training in high school, was cost (eg. ‘I haven’t been able to bring [themselves] to pay for something like that’ and ‘If it was free, especially like at university, I’d definitely make the effort’). A small number of participants also expressed concern towards being held legally liable for their actions (eg. ‘if I did anything incorrectly I wouldn’t want to be liable for any damages done to that person’). However, of the participants who did mention the issue of liability for rendering care, the majority pronounced that this would likely not stop them from intervening if their actions had the potential to save someone’s life. Nonetheless, it was a concern that weighed heavily on their minds.

Communicable diseases were also mentioned as a deterring factor lessening the likelihood participants would be willing to provide CPR. However once again, participants stated that although it was of concern, the majority suggested this factor would not be enough to stop them from rendering the care. In regards to delivering rescue breaths, one participant stated ‘If they looked super ill, you’d be hesitant. But probably the greater good would take over and you’d be like “I should probably still do that”’. Other participants were aware of compression-only CPR and stated they would avoid this issue by simply not giving the breaths if attending to a stranger. Three other barriers were mentioned by a minority of participants (three separate interviewees only mentioned one barrier each, which were not corroborated with any other interview responses): an uncomfortableness with the cracking of ribs, if the patient had an underlying medical condition or medical alert bracelet, and if the victim requiring treatment was a paediatric or elderly person.
Feeling comfortable performing CPR
Throughout the majority of interviews, a clear link was noted between level of training and participants’ confidence in performing CPR. When asked how they would feel about performing CPR, participants who had previously undertaken training stated ‘I wouldn’t be comfortable but it would be a situation that you would have to deal with. You’d get passed your ‘uncomfortableness’ and do the damned thing’ and ‘I would most likely be apprehensive but if there was no one else around I would definitely help out where I could’. When participants who undertook training in high school were asked to comment on the extent they felt they recalled the training, most suggested that while some of the specifics may have been lost to memory, the most important and pertinent skills essential to rendering effective care remained (eg. ‘Yeah, I think definitely. Like, the knowledge is still there, and like I said at the beginning if I was pushed to actually remember it all I probably could do it with fairly certain knowledge. But yeah, I guess again, because it was so long ago, I don’t feel super confident that I’d know everything. In saying that, I also don’t feel like I’d be unable to’). Only one participant with previous training stated they would still be unwilling to perform it if they came across a situation requiring it, stating ‘I just don’t think I could if I’m honest – I would be too scared or worried’.

Conversely, those participants who had no previous CPR training did not feel confident to deliver the skill. They stated that they didn’t have the knowledge to perform the skill but felt if they had undertaken some form of training, they would be far more likely to act (eg. ‘If I was confident in my abilities, then I definitely would’ and ‘If I knew what I was doing then yeah, I would certainly do what I could to help’).

Opinions on CPR and its importance
Participants acknowledged the importance of CPR and its training regardless of background, experience, training or even willingness to perform it themselves. All interviewees suggested CPR is an extremely important skill that people should possess. This is demonstrated through some interview excerpts, including: ‘It’s definitely something I feel you should be aware of because you can’t rely on other people in certain situations to do the right thing’ and ‘It was really good to know, it’s important to have those kinds of skills’.

Furthermore, participants demonstrated some knowledge of the importance of bystander CPR provision in patient health outcomes (see Table 3). There were no interviewees who weren’t aware of what CPR is or its purpose. Further, there were no participants who felt that CPR was unimportant or irrelevant.

Opinions on the introduction of mandatory CPR training in high school
The overwhelming response from participants when discussing the topic of mandatory CPR training in high schools was a resounding ‘yes’, with participants asking ‘Why isn’t it already compulsory?’ and stating ‘We learn stuff like history, economics geography and art, although those things are important, is anything as important as saving someone’s life? No. So I think it’s a really valid idea’. Participants who did receive the training in high school similarly wondered why training wasn’t offered across all secondary education. Those who didn’t receive any training made clear they wished they had been offered it during their education.

Table 3. Participant quotes on CPR skill importance

<table>
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<th>Quote</th>
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<td>‘There should always be at least one person with the skills in a situation where it’s needed. Everyone, ideally!’</td>
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<td>‘CPR is important, and can save a life, or at least help until ambulances or somebody else helps, that kind of thing.’</td>
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<td>‘If you are in public and you can see the signs or think “that person doesn’t look right” and they collapse in front of you then you know what to do instead of panicking and then waiting nearly half an hour or 20 minutes for an ambulance to come, when in that 20 minutes you could be doing some good to them. By the time that ambulance comes they could be dead.’</td>
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Table 4 depicts further participant responses to being asked if they felt CPR training should be made mandatory in high school.

Table 4. Participant quotes on mandatory CPR training in high schools

<table>
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<th>Quote</th>
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<tr>
<td>‘Yeah no I definitely think there should be a program. But I think it should be compulsory, because the one we had wasn’t, so some people didn’t bother doing it.’</td>
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<tr>
<td>‘It should be mandatory. Just because if it’s optional people might just give it a miss because at that age they don’t really see the importance.’</td>
</tr>
<tr>
<td>‘It definitely should’ve been compulsory. People don’t go out of their way to do stuff anymore, you know, learn. People don’t go out of their way to learn anymore, so if it was compulsory it would’ve been something that we all knew.’</td>
</tr>
<tr>
<td>‘I don’t see why it shouldn’t be mandatory. It’s something that all of us may need to use at one point in time, whether it be for a family member or just a stranger on the street. I feel like there will probably be a time in one of our lives where we will need the knowledge, I guess.’</td>
</tr>
</tbody>
</table>

Participants also supported the idea of CPR training in high schools because of the large numbers training within this setting would be able to reach, as demonstrated by the quotes ‘...everyone goes through high school; it’s a good place to get everyone in one place to learn and know the skills’ and ‘It should be compulsory before they leave school. If you see someone on the floor and no one around them knows what to do, they are not in the best care. But if a couple of people know what they are doing they still have a fighting chance’.
Conversely, two participants felt that CPR training in high schools either should not be mandatory or was not beneficial. One participant felt that the training should be voluntary only, as ‘Not everyone wants to do it. There will always be some people out there that don’t want to do it and forcing them to do it is just a bad move, you know bad things can come out of it, they go onto social media saying “blah blah blah done this and now I hate St John’s Ambulance” because they did this and you don’t want that’.

Discussion

As a vast percentage of cardiac arrests occur out-of-hospital (13), the provision of bystander CPR to a patient experiencing cardiac arrest can be the determinant between life and death. Therefore, a great emphasis is placed on public awareness of CPR, even if only in its most basic form. Unfortunately, bystander CPR provision rates remain low and it is clear that something must be done in an attempt to increase the amount of CPR proficient individuals who are also comfortable performing it (3). Currently in Australia, CPR training programs are not a mandatory part of the education system, and therefore are most commonly undertaken after school years due to meeting work requirements and/or personal interest. Introducing CPR at a young age results in a higher percentage of CPR competent individuals in public settings, as well as higher CPR provision rates (3,4,14). Among participants in our study, CPR was revered as an invaluable life skill that people should be encouraged to learn. Not only did the majority of participants express the importance of CPR but were also aware of the role bystander CPR plays in increasing the odds of survival. Students were more than open to the concept of implementing mandatory CPR programs in high school, with only one individual interviewed suggesting they would not be supportive.

Ours is not the first study to suggest students are open to the concept of mandatory CPR in high school. Schuffelen et al (8) and Kanstand et al (9) found students in The Netherlands and Norway respectively felt CPR should be mandatory within high schools. These studies utilised quantitative survey methodologies. Future Australian research could seek to utilise such methods to corroborate/substantiate our qualitative findings. Among our sample, there was a good understanding of what CPR is, and to what extent it can work to help cardiac arrest victims. However, this knowledge alone seemed ill-equipped to motivate young adults to seek CPR training of their own volition. Many of our participants suggested they had not undertaken CPR training, or maintained their training, due to the associated cost. An Australian survey previously identified cost as a factor limiting the uptake of CPR training in Australia (15). Providing cheaper alternatives to training may work to increase provision rates. Providing mandatory CPR in high school may work to accomplish this. This same survey noted that 78% of those who had undertaken CPR training did so to meet requirements for work or for a community/sports club, with only 16% suggesting their training was self-initiated (15).

Lack of confidence to perform the skill was also noted as a substantial barrier to actual CPR delivery. Not surprisingly, this was more eminent among those not having previously undertaken CPR training. Interestingly, regardless of previous training experience, there seemed a preoccupation with legal repercussions should CPR work to further harm the patient. Several other studies note confusion around this point as a barrier to bystander CPR provision (3,16,17). It may be that basic first aid training in Australia should work to further incorporate knowledge surrounding legal protection for the rescuer, to better arm potential interveners. Our results suggest making clear such information may work to improve confidence to act.

Limitations

There are of course study limitations that require consideration. For example, as is the case with the majority of studies utilising qualitative enquiry, participants in our study may have felt compelled to provide socially desirable responses (18). We attempted to alleviate the potential for this during our consent gathering process by assuring participants that transcribed interviews were to be entirely de-identified, thus encouraging truthful discussion. We also worked to establish a strong rapport with participants both at the beginning of, and ongoing throughout, the interviews (19). Also, there was an uneven gender distribution among our study sample (ie. 19 women, nine men). All women who were approached to participate in an interview participated, whereas only 69% of men approached agreed to participate. This is not surprising given there is clear evidence women are more likely to participate in scientific studies than men (20–22). While no notable differences were inferred between men and women participants with respect to our concepts of interest in this study, it is conceivable a more equal gender distribution would impact on study results.

Further, we acknowledge that were we to interview students presently enrolled in high school, as opposed to those recently graduated, there is the potential for responses to differ. While unlikely, it is conceivable perceptions and attitudes toward CPR provision could change between adolescence and early adulthood. Other pieces of research have noted differences in attitudes and perceptions between high school students and young adults. For example, Johnson, McCaul and Klein (23) found young adults were more understanding of the importance of practising safe sex compared to high school students. Future research could work to replicate our study results with actual high school students, and — similar to Schuffelen et al’s study (8) — gauge changes in interest in CPR provision and training with increasing age. Undertaking this research with actual high school students would have the added benefit of including those that do not go on to graduate from high school. Our study dealt with high school graduates only. However, data provided from the Australian Bureau of Statistics suggests 16% of students entering Australian high schools do not continue their studies through to graduation (24).
Conclusion

This small cross-sectional analysis found that the main barrier to performing CPR was a lack of adequate training and knowledge of CPR skills. It is clear that our study sample demonstrated acceptance of the implementation of mandatory CPR programs into Australian high schools. Given the success of such programs being implemented overseas, we suggest further investigation into the appropriateness of such an intervention to be undertaken, with the aim to implement a nation-wide CPR training program among secondary schools in Australia. This proposed intervention has the potential to impact both bystander CPR provision rates and consequently, out-of-hospital cardiac arrest survival rates among the wider Australian community.

Conflict of interest

The authors declare they have no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

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The knowledge, attitudes and preparedness of Australian paramedics to manage intimate partner violence patients – a pilot study

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The knowledge, attitudes and preparedness of Australian paramedics to manage intimate partner violence patients – a pilot study

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Abstract

Introduction
Australian ambulance services are currently attempting to improve their capacity to respond to intimate partner violence (IPV) patients, which is a significant contributing factor to the morbidity and mortality of women. Leading health organisations have called for increased training for frontline health care workers, however there is a paucity of literature on the current preparedness of Australian paramedics. A description of the preparedness of Australian paramedics to manage IPV patients has the potential to inform curricula and practice development.

Methods
We surveyed a cohort of qualified Australian paramedics using the modified Physician Readiness to Manage Intimate Partner Violence Survey.

Results
We received 28 completed surveys (16.5% response rate), that revealed most respondents (89.3%) believed they had encountered IPV patients while working as a paramedic, yet only one participant reported comprehensive education or training on the management of such patients. Participants reported low knowledge and preparedness to manage IPV patients. Participant attitudes were poor for self-efficacy, confidence and preparation, and generally neutral for items regarding attitudes toward women and IPV patients.

Conclusions
This study adds to mounting evidence that paramedics frequently encounter IPV patients, have insufficient education and training, and are not prepared to manage such patients. While the results of this study should be interpreted with caution due to a low response rate and small sample, it appears that Australian paramedics would benefit from targeted educational packages that provide the necessary knowledge to recognise and refer patients, modify inappropriate or insufficient attitudes, and prepare paramedics to effectively manage IPV patients.

Keywords:
paramedic education; family violence; research

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Introduction

Australian ambulance services have an integral role to play in preventing and reducing violence towards women, with a key focus on the recognition and referral of intimate partner violence (IPV) patients to care and support (1). Intimate partner violence refers to abuse transpiring between people who are, or were formerly, in an intimate relationship and can take the form of economic, psychological or emotional abuse, controlling behaviours, as well as physical or sexual violence (2). While IPV occurs in all population subgroups, the vast majority of the most damaging violence is perpetrated by men and borne by women (3).

Recent Australian figures show that 17% of women aged more than 18 years had experienced physical or sexual violence and 25% emotional abuse from a current or previous partner since the age of 15 (4). In contrast, only 5% of males aged more than 18 years had experienced physical or sexual violence and 14% emotional abuse from a current or previous partner since the age of 15 (4). Women experiencing IPV report poorer overall health and have greater risk of developing mental health conditions (5,6). On average, more than one Australian woman is killed each week by a current or previous intimate partner (7), and the effects on children can be severe and long lasting (6). Due to the significant impact and high prevalence of IPV, the Australian government developed a National Plan to Reduce Violence against Women and their Children (8) and, more recently, the Royal Commission into Family Violence recommended increased education and training for frontline health care workers (9).

No Australian ambulance service has published comprehensive data on how often they attend IPV patients. However, self-reporting measures demonstrate paramedics believe they frequently respond to IPV patients (10,11). Paramedics are often the first to attend IPV incidents involving emergency services (12) and their interactions with IPV patients have the potential to impact patient engagement with the health care sector and the efficacy of future care (13). Early recognition of abuse through screening has been a key element of improving the health care response to IPV (14), however screening is often not performed effectively due to barriers such as lack of knowledge and training, confidence and preparedness (13). Qualitative research shows that women are accepting of screening by health care professionals as long as it is performed in a non-judgemental and empathetic manner, and the practitioner is confident, skilled and knowledgeable (13). Therefore the knowledge, attitudes and preparedness of practitioners can have a pivotal role in the overall success of their response to IPV.

Most new paramedics employed by one of the eight ambulance services operating in Australia are now required to complete a certified undergraduate degree, however the standard curricula does not currently include mandatory education on IPV. Qualified paramedics report very low rates of IPV education and training and little is known about their current knowledge and attitudes (10,15,16). The need for IPV education within the health care sector has been well established (17), however before such education can take place there is a need to examine the current knowledge, attitudes and preparedness (KAP) to manage IPV patients of Australian paramedics. Such data could assist in the identification of practice gaps that educational packages could address.

The aim of this study was to explore the KAP of a cohort of Australian paramedics. Results will comprise the first attempt to collect and report on such data in a paramedic cohort, and have the potential to inform future educational and curricula needs for paramedics in Australia.

Methods

Study design

We utilised a survey design. Data collection took place between September and December 2015 at an Australian university offering a Bachelor conversion degree for qualified paramedics. Recruitment was performed by emailing all currently enrolled students with an invitation to participate and by placing a link to the survey on their main online bulletin board. The survey was delivered online, and was accessible from any device that could access the internet (eg. smart phone, laptop, tablet, personal computer). Participation was voluntary.

Participants

Participants were taken from a convenience sample of currently practising paramedics enrolled in a Bachelor degree conversion course. Participants were from Victoria, New South Wales, Queensland and the Northern Territory.

Instrumentation

The Physician Readiness to Manage Intimate Partner Violence Survey (PREMIS) (18) was developed to measure the KAP to manage IPV patients in United States (US) physician populations and has since been adapted for use with allied health care students and practitioners (19). The Modified PREMIS has been used with US allied health care populations including medical, dental, nursing and social work students (19-21). Only one study has reported on the psychometric properties of the modified PREMIS, finding the instrument demonstrated high internal consistency within some IPV constructs (Cronbach’s alpha >0.7) but low with others (Cronbach’s alpha <0.5); and that its construct validity was shown to be varied with a high significant correlation between perceived and actual knowledge (r=0.859) but no significant correlation between actual knowledge and perceived knowledge (r=0.064) or preparation (r=0.058) (19).
The Modified PREMIS survey is among the most comprehensive measure of KAP available for allied health care populations, however it does not measure overall clinical readiness and lacks any skills based assessment, which are acknowledged limitations. While the psychometric properties of the Modified PREMIS have never been measured with Australian allied health care cohorts, previous validation with an allied health cohort in the US (19) provides evidence for its preliminary suitability in this instance.

The Modified PREMIS (18) was utilised in this study after making slight modifications to the items by altering the wording of ‘health care practitioner’ to ‘paramedic’. This study focused on IPV and therefore four questions on family violence (specific to child abuse and elder abuse) were removed.

The Modified PREMIS is a five-part, 85-item survey. The scale measures background demographics, and contains three sub-scales measuring perceived knowledge, actual knowledge and perceived preparation to manage IPV patients, as well as six attitude sub-scales named victim/autonomy, preparation, alcohol/drugs, victim understanding, legal requirements and self-efficacy. Only five of the sub-scales were used in this study as the four omitted questions resulted in the ‘legal requirements’ scale having only one item. We also included a separate section at the end of the instrument that measured personal IPV experience.

The same scoring method as described in the original PREMIS (18) was used, with changes to reflect omitted questions. In addition, as per Connor et al (21) a dichotomous variable named ‘lifetime experience of IPV’ was created which categorised participants into those who have experienced IPV personally or witnessed it in their family, and those who had not.

Data analysis
To conduct analysis SPSS version 18 was used. Participant descriptive statistics were generated and high and low percentage correct answers were examined on each item to identify any questions that were frequently answered incorrectly. Other studies using the Modified PREMIS have reported mean scores for scales, however as our data were non-normally distributed based on Shapiro-Wilk’s test (p<0.05), medians were calculated for each sub-scale.

Ethics
Ethics approval was granted by a Human Ethics Board, Monash University Human Research Ethics Committee.

Results
In total 28 surveys were returned form participants (16.4% response rate). While most surveys were returned complete and all surveys were used in the study, some contained random missing data (22) where the participant had not answered one or more items. Where missing data impacted statistical analysis we noted the adjusted sample size.

Participants were 35.7% female (n=10) with a median age of 40 years (IQR = 34-46), which is comparable to a previously reported median age for Australian paramedics (23). Among the sample, 75.0% (n=21) worked as ‘advanced life support’ paramedics and 82.1% (n=23) worked in a state ambulance service. Of the participants 67.9% (n=19) reported having no previous IPV training, with most of those that reported training stating they had attended a lecture or watched a video. Almost all of the respondents reported encountering IPV at work (n=25, 89.3%) and only 17.8% (n=5) were aware if their employer had a policy on domestic violence. See Table 1 for the full demographic profile.

Knowledge, preparation and opinions
Actual knowledge was scored based on 18 items with a possible score range of 0-38. The median score for our sample was 25 (IQR = 21-28), which equates to 65.8% (IQR = 55.3–73.7%) correct answers.

Perceived knowledge was scored on a 7-point Likert scale (1 = ‘nothing’ to 7 = ‘very much’). The median score was 2.79 (IQR = 2.43-3.86), meaning they felt they knew between ‘very little’ (2) and ‘a little’ (3) about IPV.

Perceived preparation was scored on a 7-point Likert scale (1 = ‘not prepared’ to 7 = ‘quite well prepared’). The median score was 2.79 (IQR = 2.43-3.86), meaning they felt between ‘minimally’ (2) and ‘slightly’ (3) prepared.

Attitudes were scored on a 7-point Likert scale (1 = ‘strongly disagree’ to 7 = ‘strongly agree’). Fifteen items were reverse coded, after which the preferred score for each item was 7. Median scores for each item ranged between 3 and 7. Median scores for the five opinion sub-scales ranged between 3 and 4 (see Appendix 4). Participants reported low self-efficacy, confidence and preparedness to manage IPV patients. Attitudes towards women and patients were generally neutral, meaning participants neither agreed nor disagreed with attitudinal items. Notably some participants expressed some negative attitudes towards women and patients. See Appendices 1-4 for individual item results.

Previous training
Of the respondents, 67.9% (n=19) reported no previous training, while 28.6% (n=6) reported watching a video or attending a lecture, and only one respondent reported having attended skills based training.

Personal experience
Of the respondents who replied to the question, 29.4% (n=5) of males and 60.0% (n=6) of females reported personally experiencing IPV against themselves. Additionally, 53.6% (n=15) of respondents reported witnessing IPV in their family.
Table 1. Survey respondent demographics

<table>
<thead>
<tr>
<th>Total records</th>
<th>n</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
<td>17</td>
<td>60.7%</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>35.7%</td>
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<tr>
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<td>3.6%</td>
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<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>3</td>
<td>10.7%</td>
</tr>
<tr>
<td>30-39</td>
<td>8</td>
<td>28.6%</td>
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<td>40-49</td>
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</tr>
<tr>
<td>50-59</td>
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<td>10.7%</td>
</tr>
<tr>
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</tr>
<tr>
<td>Paramedic level</td>
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<td></td>
</tr>
<tr>
<td>Basic life support</td>
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<td>25.0%</td>
</tr>
<tr>
<td>Advanced life support</td>
<td>21</td>
<td>75.0%</td>
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<td>Missing</td>
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<td>Where do you work?</td>
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<td></td>
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<tr>
<td>State ambulance service</td>
<td>23</td>
<td>82.1%</td>
</tr>
<tr>
<td>Private ambulance service</td>
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<td>7.1%</td>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>3</td>
<td>10.7%</td>
</tr>
<tr>
<td>Previous training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>19</td>
<td>67.9%</td>
</tr>
<tr>
<td>Video</td>
<td>6</td>
<td>21.4%</td>
</tr>
<tr>
<td>Lecture</td>
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<td>7.1%</td>
</tr>
<tr>
<td>Skills training</td>
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</tr>
<tr>
<td>In-depth</td>
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</tr>
<tr>
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<tr>
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</tr>
<tr>
<td>Personal IPV experience</td>
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<td></td>
</tr>
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<td>10</td>
<td>35.7%</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
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<tr>
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<td>10.7%</td>
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<tr>
<td>Lifetime IPV experience</td>
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</tr>
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<td>15</td>
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<tr>
<td>Missing</td>
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<td>14.3%</td>
</tr>
</tbody>
</table>

Note: ‘Where do you work?’ question allowed multiple responses
Note: ‘Lifetime IPV experience’ refers to participants who have experienced IPV personally or witnessed it in their family

Frequency of encountering IPV
Of the respondents 89.3% (n=25) believed they had encountered an IPV patient while at work. Estimates of the number of IPV patients encountered ranged between two and 1000, with just over 57.1% (n=16) of the respondents reporting 2-12 cases, 25.0% (n=7) reporting 75-300, and 7.1% (n=2) reporting 1000 cases. Notably, 10.7% (n=3) reported that they did not believe they had attended an IPV patient, all of whom had served between 6-10 years as a paramedic.

Discussion
This study aimed to explore the KAP to manage IPV patients of a cohort of Australian paramedics. These preliminary results suggest paramedics may lack the necessary KAP to properly manage IPV patients. These findings may indicate that the Australian paramedic curricula is not properly preparing future practitioners to respond appropriately to IPV patients, which could result in missed opportunities to recognise and refer IPV patients to care and support. Key findings and implications will be discussed.

Knowledge, attitudes and preparedness
The median value for the actual knowledge scale (65.8%) should be considered low as most of the items measuring knowledge referred to essential knowledge necessary to recognise and refer IPV patients accurately and appropriately. This result is unsurprising as two-thirds of participants reported no previous education or training with respect to IPV, and those that had received training had only attended a lecture or watched a video, both of which have been shown to be largely ineffective as educational methods due to shortcomings such as the inability to practise skills (24). Results were relatively consistent with similar allied health care populations such as nurses (20), suggesting that this knowledge deficiency is not limited to paramedicine, and were also consistent with Australian paramedic undergraduate students (25), indicating findings may not be limited to practicing paramedics and may stem from a deficiency in the curricula.

The median score for perceived knowledge expressed as a percentage is 39.9%, which is considerably lower than actual knowledge. This would imply that our cohort of paramedics did not feel confident in their knowledge. This may result in paramedics not feeling confident enough to discuss IPV with patients even when they do have reason to suspect it, which has been shown to be a major barrier for health care practitioners to respond to IPV (26). This is further evidenced by the perceived preparation scale which showed that participants felt only ‘slightly’ prepared to manage IPV patients. It would seem appropriate, therefore, that specific IPV training be implemented which empowers participants to feel confident in their ability to recognise and manage IPV, which has been previously called for by the World Health Organization (27).
With evaluation of item-level responses it is clear that participants would benefit from education surrounding the theoretical background to IPV, identification of IPV, how to question patients, documentation and legal requirements, all of which form part of recommended curricula for frontline health care workers (27,28) and would be necessary to ensure a sensitive and effective response to patients.

Median scores across the five attitude subscales ranged 3.70–4.83. These scores roughly reflected the corresponding mean scores when the PREMIS was initially used with US physicians (18), other allied health care populations (19-21) and Australian paramedic students (29). The uniformity of results in attitude subscales across health care disciplines may be a reflection of general community attitudes, and highlights the difficulties inherent in changing or improving attitudes. One previous review found no reliable evidence to show that the attitudes of health care practitioners in regards to IPV can be changed or improved (24). Therefore this finding should not be construed as a deficiency unique to paramedicine and should be the subject of future research.

Overall, participant attitudes concerning their own self-efficacy and preparation were poor, which might be expected given the lack of comprehensive training and education. Interestingly, qualified paramedics actually scored lower in self-efficacy items than paramedic students given the same instrument (29). This may suggest once paramedics begin to encounter IPV patients their self-efficacy decreases as they feel their training is insufficient. Previous research has shown feeling unprepared and having a lack of resources (such as protocols) can impact on the willingness of practitioners to screen patients (26). Therefore there is a risk that by not properly preparing and providing adequate resources to paramedics they will become reluctant to discuss IPV with patients, and may even begin to intentionally ignore signs and symptoms of IPV to avoid conversations they find difficult or confronting.

Items concerning attitudes towards women and patients were mostly neutral, which may be considered insufficient as both positive attitudes towards women and patient autonomy have been reported as essential to an appropriate approach to patients (13). This is because IPV patients desire to be believed and to be treated in a compassionate and non-judgemental manner (13), and therefore it is important that paramedics have appropriate attitudes. It is unclear due to a lack of research if the absence of positive attitudes will impact on patient approach, however as this has the potential to negatively impact patients and provides opportunities for more research in this area.

Notably some participants held some inappropriate attitudes, such as believing that patients are not able to make appropriate choices about their situation and that patients do not have the right to choose if paramedics intervene. This belief was also found in a population of Australian student paramedics (29). Such attitudes are problematic as they indicate similar beliefs to those that are theorised to lead to the use of violence within relationships, namely believing it is acceptable to use power and control to coerce another person into following a course of action they haven’t chosen for themselves (2). There is a potential that any misapplication of power and control arising out of these attitudes will have negative impacts on patient outcomes (13), regardless of whether the paramedic believes that they are acting in the patient’s best interests.

**Previous training**

The majority of participants (67.9%) had not undergone structured IPV training and only one respondent reported undertaking skills based training, which adds further evidence that paramedics rarely receive comprehensive IPV education (10). This general lack of education found in the paramedic samples studied may indicate deficiencies in the paramedic curricula and there is a need to review the content of paramedic courses to ascertain if alterations are necessary. Adequate training is important as previous research has shown that untrained and unprepared practitioners are less likely to recognise and refer IPV patients to care and support (26), resulting in missed opportunities to connect patients with services that may assist them to reduce future harm.

**Frequency of encountering IPV**

Despite mounting evidence that paramedics frequently encounter IPV patients (10,11) it is difficult to draw firm conclusions as precise IPV data are not collected by Australian ambulance services. Results from this study confirm those of a previous self-reporting measure delivered to 50 Australian paramedics, where it was found that 90% of paramedics reported encountering at least one case of suspected IPV in the last year, with the average number of cases being 3.66(10). These are significant findings as patients may not always present with obvious or traumatic symptoms (30) and as paramedics generally lack sufficient education they may be unlikely to suspect and ask about IPV in many cases. Hence, such self-reported measures maybe potentially under-reporting the true frequency of paramedics encountering IPV, and increased education could therefore result in much higher rates of reporting. It is believed that reporting of IPV is low due to the high barriers to disclosure which include untrained practitioners not asking patients about IPV, asking inappropriately, or displaying behaviours and attitudes which make patients less likely to disclose (31). Therefore by improving education it may improve accuracy of reporting from paramedics which could improve overall reporting thus creating a more accurate picture of the scale of the issue.

**Personal experience of IPV**

Of the respondents, 26.7% of men and 55.6% of women reported experiencing IPV to their persons, which is around three times the rate experienced by the general population (4). Our question about personal IPV experience was not directly comparable with Australian population statistics however, as we asked about physical and emotional violence together. Also due to the low response rate it is possible that results are skewed
towards paramedics with a previous history of IPV and may have therefore had a higher interest in responding to the study.

This topic warrants further investigation as it is unclear if personal experience of IPV influences workplace behaviours, such as willingness or reluctance to discuss IPV with patients (26). Additionally, mental health conditions such as depression, anxiety and post-traumatic stress disorder are known to be associated with IPV (32), therefore there is a risk to paramedic wellbeing by exposing those with personal IPV experience to additional vicarious trauma in education and on the job. Thus if ambulance services do adopt IPV protocols it would be important that they provide appropriate educational delivery options, as well as ensuring support services are available to paramedics.

**Implications for future practice**

Despite the sampling limitations, results from this pilot study indicated Australian paramedics encounter IPV frequently, do not have the necessary KAP to manage IPV patients and, rarely, have adequate training. Further research should be undertaken with larger samples to provide more robust figures.

Structured training should be incorporated into the Australian paramedic curricula that provides paramedics with the required knowledge to recognise and refer IPV patients, improves inappropriate and insufficient attitudes and properly prepares them to manage these patients.

Additionally, should further research confirm that paramedics are personally overrepresented in IPV statistics there is a need to explore potential causative factors as well as ensure paramedic wellbeing before introducing education and clinical guidelines.

**Limitations**

Our study was significantly limited by the small sample size which may not be representative of the broader paramedic population. Our recruitment method may also have biased results toward participants with an interest in the topic. Furthermore, as our participants were degree conversion students they may differ significantly from paramedics who have completed an undergraduate degree, which is the norm for paramedics in Australia.

Additional limitations include the use of an instrument that has not been validated for use in this population, the limitations of Likert scales (particularly patients being influenced by previous questions and being unwilling to respond to the extremes) and numerous items requiring long-term recall and self-reported answers.

**Conclusions**

Despite study limitations our results add further evidence that paramedics frequently encounter IPV patients, rarely receive adequate training, and do not appear to have adequate knowledge, attitudes and preparedness to manage IPV patients. There is a clear need to conduct further research in this population to confirm that any identified educational deficiencies are addressed and that paramedics are able to provide an appropriate response to IPV patients. By improving education paramedics may be more likely to recognise and respond appropriately to IPV patients, which may improve health care outcomes. Improved education and training in IPV would most likely be of significant benefit to patients and paramedics, and this should be undertaken as a priority for the profession.

**Conflict of interest**

The authors declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement. Brett Williams is an Associate Editor of the Australasian Journal of Paramedicine.

**Acknowledgements**

We would like to acknowledge and thank the paramedics who completed our survey and the lecturers who provided access to them.

**References**

References (continued)


### Appendix 1. Percentage correct for actual knowledge items

<table>
<thead>
<tr>
<th>Question</th>
<th>% correct</th>
<th>% incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the strongest single risk factor for becoming a victim of intimate partner violence?</td>
<td>21.4%</td>
<td>78.6%</td>
</tr>
<tr>
<td>Which one of the following is generally true about batterers/perpetrators?</td>
<td>75.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Which of the following are warning signs that a patient may have been abused by his/her partner?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic unexplained pain</td>
<td>60.7%</td>
<td>39.3%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>78.6%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>64.3%</td>
<td>35.7%</td>
</tr>
<tr>
<td>Frequent injuries</td>
<td>82.1%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Depression</td>
<td>78.6%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Which of the following are reasons an IPV victim may not be able to leave a violent relationship?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear of retribution</td>
<td>82.1%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Financial dependence on the perpetrator</td>
<td>85.7%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Religious beliefs</td>
<td>67.9%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Children’s needs</td>
<td>85.7%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Love for one’s partner</td>
<td>67.9%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Isolation</td>
<td>78.6%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Which of the following are the most appropriate ways to ask about IPV?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘Are you a victim of intimate partner violence?’</td>
<td>89.3%</td>
<td>10.7%</td>
</tr>
<tr>
<td>‘Has your partner ever hurt or threatened you?’</td>
<td>75.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>‘Have you ever been afraid of your partner?’</td>
<td>7.1%</td>
<td>92.9%</td>
</tr>
<tr>
<td>‘Has your partner ever hit or hurt you?’</td>
<td>39.3%</td>
<td>60.7%</td>
</tr>
<tr>
<td>Which of the following is/are generally true?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are common, non-injury presentations of abused patients</td>
<td>53.6%</td>
<td>46.4%</td>
</tr>
<tr>
<td>There are behavioural patterns in couples that may indicate IPV</td>
<td>64.3%</td>
<td>35.7%</td>
</tr>
<tr>
<td>Specific areas of the body are most often targeted in IPV cases</td>
<td>60.7%</td>
<td>39.3%</td>
</tr>
<tr>
<td>There are common injury patterns associated with IPV</td>
<td>57.1%</td>
<td>42.9%</td>
</tr>
<tr>
<td>Injuries in different stages of recovery may indicate abuse</td>
<td>78.6%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Label the following descriptions of the behaviours and feelings of patients with a history of IPV with the appropriate stage of change:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Begins making plans for leaving the abusive partner</td>
<td>53.6%</td>
<td>46.4%</td>
</tr>
<tr>
<td>Denies there’s a problem</td>
<td>82.1%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Begins thinking the abuse is not their own fault</td>
<td>78.6%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Continues changing behaviours</td>
<td>28.6%</td>
<td>71.4%</td>
</tr>
<tr>
<td>Obtains order(s) for protection</td>
<td>50.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Alcohol consumption is the greatest single predictor of the likelihood of IPV</td>
<td>35.7%</td>
<td>64.3%</td>
</tr>
<tr>
<td>There are no good reasons for not leaving an abusive relationship</td>
<td>42.9%</td>
<td>57.1%</td>
</tr>
<tr>
<td>Reasons for concern about IPV should not be included in a patient’s patient care record if s/he does not disclose the violence</td>
<td>71.4%</td>
<td>28.6%</td>
</tr>
<tr>
<td>When asking patients about IPV, paramedics should use the words ‘abused’ or ‘battered’</td>
<td>60.7%</td>
<td>39.3%</td>
</tr>
<tr>
<td>Being supportive of a patient’s choice to remain in a violent relationship would condone the abuse</td>
<td>57.1%</td>
<td>42.9%</td>
</tr>
<tr>
<td>Victims of IPV are able to make appropriate choices about how to handle their situation</td>
<td>28.6%</td>
<td>71.4%</td>
</tr>
<tr>
<td>Health care providers should not pressure patients to acknowledge that they are living in an abusive relationship</td>
<td>46.4%</td>
<td>53.6%</td>
</tr>
<tr>
<td>Victims of IPV are at greater risk of injury when they leave the relationship</td>
<td>25.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Strangulation injuries are rare in cases of IPV</td>
<td>25.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Allowing partners or friends to be present during a patient’s history and physical exam ensures safety for an IPV victim</td>
<td>71.4%</td>
<td>28.6%</td>
</tr>
<tr>
<td>Even if the child is not in immediate danger, paramedics in Victoria are mandated to report an instance of a child witnessing IPV</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
### Appendix 2. Median perceived knowledge scores by item

<table>
<thead>
<tr>
<th>How much do you think you know about:</th>
<th>Median</th>
<th>25th Percentile</th>
<th>75th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your legal reporting requirements for IPV</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Signs or symptoms of IPV</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>How to document IPV on a PCR</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Referral sources for IPV victims</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Perpetrators of IPV</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Relationship between IPV and pregnancy</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Recognizing the childhood effects of witnessing IPV</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>What questions to ask to identify IPV</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Why a victim might not disclose IPV</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Your role in detecting IPV</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>What to say and not say in IPV situations with a patient</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Determining danger for a patient experiencing IPV</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Developing a safety plan with an IPV victim</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>The stages an IPV victim experiences in understanding and changing their situation</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Perceived knowledge scale</td>
<td>2.43</td>
<td>1.93</td>
<td>3.50</td>
</tr>
</tbody>
</table>

### Appendix 3. Median perceived preparation scores by item

<table>
<thead>
<tr>
<th>How prepared do you feel to:</th>
<th>Median</th>
<th>25th Percentile</th>
<th>75th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask appropriate questions about IPV</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Appropriately respond to disclosures of abuse</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Identify IPV indicators based on patient history, and physical examination</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Assess an IPV victim’s readiness to change</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Help an IPV victim assess his/her danger of lethality</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Conduct a safety assessment for the victim’s children</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Help an IPV victim create a safety plan</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Document IPV history and physical examination findings on a PCR</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Make appropriate referrals for IPV</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Fulfil state reporting requirements for IPV</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Perceived preparation scale</td>
<td>3.20</td>
<td>2.45</td>
<td>4.20</td>
</tr>
</tbody>
</table>
Sawyer: Preparedness of paramedics to manage IPV patients
Australasian Journal of Paramedicine: 2018;15(2)

Appendix 4. Median attitude scores by item (reverse coded items in grey)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Median</th>
<th>25th Percentile</th>
<th>75th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an IPV victim does not acknowledge the abuse, there is very little that I can do to help (R)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>I would ask all patients about abuse in their relationships</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I can make appropriate referrals to services within the community for IPV victims</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>I am capable of identifying IPV without asking my patient about it (R)</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I do not have sufficient training to assist individuals in addressing situations of IPV (R)</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Patients who abuse alcohol or other drugs are likely to have a history of IPV</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Victims of abuse have the right to make their own decisions about whether paramedics should intervene</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel comfortable discussing IPV with my patients</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I don't have the necessary skills to discuss abuse with an IPV victim who is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female (R)</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Male (R)</td>
<td>4</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>from a different cultural/ethnic background (R)</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>If victims of abuse remain in the relationship after repeated episodes of violence, they must accept responsibility for that violence (R)</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>I am aware of legal requirements in Victoria regarding reporting of suspected cases of IPV</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Paramedics do not have the time to assist patients in addressing IPV (R)</td>
<td>6</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>I am able to gather the necessary information to identify IPV as the underlying cause of patient illnesses (eg. depression, migraines)</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>If a patient refuses to discuss the abuse, paramedics can only treat the patient's injuries (R)</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Victims of abuse could leave the relationship if they wanted to (R)</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Paramedics have a responsibility to ask patients about IPV</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Alcohol abuse is a leading cause of IPV (R)</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Victims of abuse often have valid reasons for remaining in the abusive relationship</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Screening for IPV is likely to offend those who are screened (R)</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>I am able to gather the necessary information to identify IPV as the underlying cause of patient injuries (eg. bruises, fractures, etc.)</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Women who choose to step out of traditional roles are a major cause of IPV (R)</td>
<td>6</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Paramedics do not have the knowledge to assist patients in addressing IPV (R)</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>I can match therapeutic interventions to an IPV patient's readiness to change</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I understand why IPV victims do not always comply with paramedic recommendations</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Use of alcohol or other drugs is related to IPV victimisation</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>I can recognise victims of IPV by the way they behave (R)</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Victim autonomy scale</td>
<td>4.83</td>
<td>4.17</td>
<td>5.00</td>
</tr>
<tr>
<td>Preparation scale</td>
<td>3.70</td>
<td>3.00</td>
<td>4.50</td>
</tr>
<tr>
<td>Alcohol/drugs scale</td>
<td>4.17</td>
<td>3.67</td>
<td>4.33</td>
</tr>
<tr>
<td>Victim understanding scale</td>
<td>4.83</td>
<td>4.58</td>
<td>5.17</td>
</tr>
<tr>
<td>Self-efficacy scale</td>
<td>3.67</td>
<td>3.17</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Note: (R) indicates medians have been reversed due to reverse coded questions
Coronial consideration of patient deaths in paramedicine

Dominique Lee Moritz
University of the Sunshine Coast, Queensland, Australia
Commentary

Coronial consideration of patient deaths in paramedicine

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Abstract

During the course of a paramedic’s duties, it is inevitable that they will deal with patient death in some way. Australia’s coronial system is a safeguard to ensure deaths are investigated where their cause is not immediately known, or the circumstances surrounding the death is unusual.

This article considers three recent coronial inquests involving paramedic care in Australia; identifies the significant observations that can be made from analysing the paramedics’ actions during patient treatment; and comments on how the coronial system can be used to improve patient outcomes.

Keywords:
public policy; coronial system; law

Corresponding author: Dominique Lee Moritz, dmoritz@usc.edu.au
Introduction

During the course of a paramedic’s duties, it is inevitable that they will deal with patient death in some way. Whether the patient’s death occurred before paramedic attendance, during paramedic treatment or after paramedics have handed over their patient to the hospital, they will encounter death. Australia’s coronial system is a safeguard to ensure deaths are investigated where their cause is not immediately known, or the circumstances surrounding the death is unusual.

This article will consider three coronial inquests involving paramedic care in Australia: the 2016 death of Stacey Yean; the 2012 death of Ruby Yan Chen; and, the 2010 death of Thomas Olive. These cases are particularly noteworthy as they consider circumstances where paramedics were directly involved with the patient before their death. The three cases considered in this article come from reports published by coroners and the reports are available in the public domain. After considering the circumstances of these deaths, the author will identify notable observations that can be made from analysing the paramedics’ actions during patient treatment, which is significant to determine how the coronial system can be used to improve patient outcomes.

Australian coronial courts

Australian coroner’s courts are involved with death investigations. If a medical practitioner will not issue a cause of death certificate following a person’s death, the death becomes ‘reportable’ to the coroner in the relevant Australian jurisdiction (1). After investigating a death, coroners make recommendations to prevent injury and death occurring in similar circumstances (2). As such, coroners ‘speak for the dead to protect the living’ (3). Cononal legislation differs in each Australian jurisdiction. Generally, for a death to be investigated by a coroner, it needs to be a ‘reportable’ death. While the definition of a reportable death differs between jurisdictions, reportable deaths are unexpected, violent, unnatural and/or suspicious in nature. A specific category of reportable death also exists for health-related deaths or where death is not a reasonably expected outcome of a health procedure (1).

Health-related deaths can apply to paramedic practice: as a result of a patient’s death following paramedic treatment, where paramedics may have been involved in the patient’s death in some way; or where paramedics may have exacerbated a patient’s injury in some way which leads to the patient’s death. While coronial courts have the benefit of hindsight in their decisions, their comments shed light on the circumstances of a patient’s death and allow organisations and individual paramedics the opportunity to reflect on their professional conduct in order to determine whether a more appropriate response was warranted.

Death of Stacey Yean

A recent case to go before the Coroner’s Court of Victoria was an inquest into the death of Stacey Louise Yean (4). Stacey, 23 years of age, fell ill on 5 January 2016 experiencing stomach pain and vomiting. The patient’s family members contacted the hospital, her general practitioner and a locum medical service for advice. Family members then made an emergency call requesting paramedic attendance but an ambulance crew was not dispatched as the patient did not meet the ‘low acuity ambulance criteria’. A second emergency call was made when the patient’s vomiting continued and an Ambulance Victoria ambulance crew was dispatched. The crew consisted of an advanced life support (ALS) clinical instructor and an ALS graduate paramedic (4).

On arrival, paramedics assessed the patient and determined her vital signs were within normal range. Paramedics offered to transport the patient to hospital but advised that her condition did not mandate a hospital visit. Further, paramedics also indicated that ‘ramping’ was occurring at the hospital meaning the patient could expect significant delays to be seen by a medical practitioner. The patient declined the offer for transportation and paramedics left the patient at her home. The patient’s condition did not worsen although the vomiting continued. The patient was found deceased in her bed the following day (4).

The Coroner identified the ‘primary issue of contention’ for this inquest was whether the paramedics’ decision not to transport the patient was reasonable in the circumstances. The Coroner held that paramedics acted within their clinical guidelines in recommending that the patient’s condition did not necessitate ambulance transport. Further, paramedics suggesting the possibility of a wait at hospital was a stated fact. While the patient’s parents suggested this fact was the reason the patient declined the offer of transport to hospital, the Coroner indicated that the patient remaining at home did not cause her death. As such, no fault could be attributed to the attending paramedics. The cause of the patient’s death, here, was unfortunately unable to be ascertained (4).

A number of noteworthy observations can be made from these inquest findings. An organisation’s clinical policies are important. In following those policies, no blame was attributable to the individual paramedics. Further, the findings support the notion that paramedics do not need to transport every patient. Provided they use their clinical judgement, and their decision accords with organisational policy, paramedics can recommend patients remain at home rather than being transported to hospital.
Death of Ruby Yan Chen

Ruby Yan Chen, four years of age, died during a patient transfer between Blackwater Hospital and Rockhampton Base Hospital in August 2012 (5). The aero-medical transfer was conducted by Queensland Ambulance Service (QAS) flight paramedics who were qualified intensive care paramedics (now called critical care paramedics). When the aero-medical team collected the patient from Blackwater Hospital they requested a nurse remove the patient’s intravenous (IV) saline bag, which was providing hydration. The paramedics reused that same IV bag on the patient during the flight, after ‘priming’ and ‘re-spiking’. During transfer, the patient deteriorated and suffered seizures and cardiac arrest. Despite paramedics attempting resuscitation, the patient could not be revived (5).

The Rockhampton Coroner’s Court held an inquest into the patient’s death to determine the cause. An autopsy performed on the patient found an air embolism in her heart and jugular vein. Reusing the partially depleted IV bag was held to be the cause of the air embolism leading to the patient’s death (5).

There were a number of concerns about the patient’s treatment which the Coroner raised during the inquest. Despite the paramedics’ evidence that reusing the IV bags maximised use of the resources, there were fresh saline bags available for use. As such, reusing the IV bags could not be justified. Further, the patient’s death was caused entirely by the re-spiking of the IV bag. However, the Coroner did comment that the resuscitation attempt on the patient accorded with best practice (5).

A number of significant recommendations came out of the inquest. Saline bags should be single use only. Further, paramedics should receive training on the dangers of re-spiking IV bags. Finally, QAS clinical procedures needed development in relation to the preparation required to re-spike IV bags (and this was addressed proactively by the ambulance service) (5).

These findings highlight the importance of the coronial process. Given the patient’s death was attributable to the ‘re-spiking’ of the IV bag, the findings highlight how ‘re-spiking’ is a danger to patients. As such, health practitioners can avoid this practice and hopefully reduce similar patient deaths from recurring (6).

Death of Thomas Olive

Actions of paramedics in treating Thomas Olive, four years of age, were also scrutinised (7). The patient exhibited a number of sporadic symptoms in the lead up to his death including discoloured urine and muscle/joint pain. The patient’s parents consulted with a number of medical practitioners including general practitioners and paediatricians. The patient was also taken to Nambour General Hospital approximately 2 months before his death. On 25 August 2010, the patient experienced difficulty walking, lethargy and a fast heartbeat. Queensland Ambulance Service paramedics were called and an advanced care paramedic and third year student paramedic attended (7).

Paramedics determined that the patient had ‘a Glasgow Coma Scale of 10; a low temperature of 33.9; a fast pulse of 143; blood pressure of 105/60; and respiratory rate of 25’.

Paramedics determined the patient’s condition was time critical and left for Nambour General Hospital after seeking intensive care paramedic (now called a critical care paramedic) attendance en-route (7).

One of the primary considerations for the Coroner in this case was the medical reporting of the paramedics. The advanced care paramedic crew documented the patient showing considerable improvement including alertness, laughter and talking. The intensive care paramedic, though, identified significant concerns with the patient’s condition including lethargy, diaphoresis and sinus tachycardia. The discrepancies were reflected in the medical documentation in the form of conflicting electronic ambulance report forms. On arrival to the hospital, the patient deteriorated quickly leading to an unsuccessful resuscitation. His death was attributed to a rare metabolic gene mutation causing rhabdomyolysis (7).

The Coroner considered a range of contributors (the various health practitioners involved in the patient’s care) relating to a failure to diagnose the patient. While the hospital’s response is not relevant to this discussion nor is the role of the medical practitioners or nurses, the Coroner did comment on the paramedics’ involvement in the patient’s treatment (7).

There are several significant matters in relation to the paramedics’ treatment of the patient to note here. While en-route to hospital, information about the patient’s condition was passed to senior medical staff but not to the triage nurse, which caused a delay in transferring the patient to a resuscitation bed. Further, the declaration of the patient’s improvement influenced the triage decision causing delay in the hospital’s ability to respond to the patient’s deterioration. Further, the electrocardiography results from the ambulance were never provided to the hospital despite indications of hyperkalaemia. Despite these shortcomings, the Coroner identified that the paramedic responses to the triaging and handover processes at the hospital were adequate and that the handover procedures did not negatively affect the patient’s treatment outcome (7).

Thomas Olive’s inquest findings highlight the importance of accurate medical reporting. Medical reporting is essential as it supports patient treatment. Inadequate medical reporting can lead to a range of outcomes including breaching the appropriate standard of patient care and professional misconduct. This inquest is a timely reminder to paramedics that accurate medical reporting is crucial to patient care.
Conclusion

Coronial courts have an important function. They investigate and comment on unusual patient deaths in order to prevent deaths recurring in similar circumstances. Coronial courts are particularly relevant to paramedicine given the propensity for patient deaths to occur while a paramedic is in attendance. As such, the coronial system can provide some important commentary of organisational policy and paramedic conduct.

The three coronial cases considered in this article are significant to paramedicine policy and procedures. The death of Stacey Yean affirmed a paramedic’s capacity to advise patients to remain home when a hospital visit is not warranted. Ruby Yan Chen’s death highlighted the dangers of re-spiking IV bags and necessitated development of organisational policies dealing with procedures surrounding the re-spiking of IV bags. Finally, Thomas Olive’s death emphasised the importance of accurate medical reporting and identified how inaccurate medical reporting could cause adverse patient outcomes. While these patient deaths were tragic, the coronial system allowed for recommendations to be made which, hopefully, prevent future deaths in similar circumstances.

Future coronial inquest findings involving paramedics may address individual paramedic conduct with impending paramedic registration. With Australian paramedics becoming professionally registered as health practitioners, coronial findings may reflect the new status of paramedics as registered health professionals. Coroners may refer a matter to the Australian Health Practitioner Regulation Agency or a relevant national board where it has implications for registered health practitioners. Coroners may need to consider whether future paramedic conduct that might contribute to patient death needs to be referred to the Paramedicine Board of Australia. Registration of paramedics is expected to occur in late 2018.

Conflict of interest

The author declares she has no competing interests. The author of this paper has completed the ICMJE conflict of interest statement.

References

4. Inquest into the Death of Stacey Louise Yean (Coroner’s Court of Victoria, Coroner Byrne, 23 March 2017).
5. Inquest into the Death of Ruby Yan Chen (Coroner’s Court of Rockhampton, Coroner O’Connell, 12 December 2014).
7. Inquest into the Death of Thomas Andrew Olive (Coroner’s Court of Maroochydore, Coroner Lock, 5 August 2014).