Trends in the paramedic workforce: a profession in transition

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AMBULANCE SERVICES play a key role in the Australian health system, as the primary providers of pre-hospital clinical care, emergency care and specialised transport.[1] Although at present there is a strong focus on broad health system reform, and health workforce reform specifically, little attention has been paid to the place of pre-hospital clinical care and the paramedic workforce that provides these services. Despite their significant role in the health system, there is no strategic national approach by government to the development of ambulance services or the paramedic workforce.

In this paper, we review current and emerging trends impacting on the paramedic workforce. We examine changes in patterns of ambulance service provision and the nature of clinical work undertaken by paramedics, as well as developments in education, training and career pathways. We focus on the current situation in Victoria to illustrate and identify a number of important implications of current changes, for the profession, service and training providers, and policy makers.

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A changing work environment

Utilisation of ambulance services has increased markedly in recent years. Responses by ambulance services nationally increased from 13 per 100 000 persons in 2002 to 15 in 2007, representing 15% growth (Box 1).[2] The number of patients treated rose from 10 per 100 000 persons to 13 (30% growth) in the same period. The factors identified as impacting on increased demand for ambulance services include: a shift in setting of care from the acute to the community setting; pressures on the primary health care sector (eg, general practitioner workforce shortages); ageing of the population; and increasing prevalence of chronic conditions.[1,3] Demand for ambulance services has been forecast to continue to increase in the coming years.[1]

This increasing demand has contributed to mounting pressure on the paramedic workforce. A recent survey by the Ambulance Employees Association reported high levels of stress and fatigue in the Victorian paramedic workforce, with 98% of respondents reporting workplace fatigue in the last 12 months.[4] Main reasons for fatigue included heavy workloads (73%) and no meal or rest breaks during shifts (69%). Eighty-seven percent reported that fatigue had affected their judgement at work.[4] This is an unpublished study conducted by a union using a relatively small ($n = 346$) and non-random sample, and thus may overestimate the extent of these problems in the Victorian paramedic workforce.

The nature of paramedic work is also changing, with increased responsibility for clinical decision-making and treatment. This is evident in changes in the categories of patients treated by ambulance services. Patients "treated but not transported" comprised 9.8% of all ambulance service patients 5 years ago, rising to 13.8% in 2006–07.[2] In per capita terms, this is a 68% increase in this

1 Ambulance services Australia 2002–2007*

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
Responses (000s)						
Emergency responses	1182	1220	1292	1337	1268	1384
Urgent responses	416	480	533	573	818	877
Non-emergency responses	861	864	869	883	903	941
Total	2459	2563	2694	2793	2989	3202
Responses per 100 000 persons	13	13	14	14	15	15
Patients (000s)						
Transported patients	1837	1902	1928	1988	2128	2251
Patients treated not transported	200	248	268	276	305	360
Total	2037	2150	2196	2264	2432	2611
Patients per 100 000 persons	10	11	11	11	12	13

* Source: Productivity Commission. Totals may not tally due to rounding.[2] A "response" is defined as an ambulance service vehicle or vehicles being sent to an incident. A "patient" is defined as "someone assessed, treated or transported by the ambulance service"[2]

category of patients between 2001–02 and 2006–07 (from 1.02 per 100 000 persons to 1.71[2]). For these relatively low-acuity cases, paramedics make decisions about triage, management and referral as required. This is consistent with the finding that home visits by GPs have decreased over the last decade by 51%, from 15.8 per 100 persons in 1997 to 7.7 in 2007.[5] Another trend reported anecdotally includes a changing social environment to more of a "user culture", with heightened service expectations.

The use of formal referral pathways by ambulance services is another new development that indicates the changing role of paramedics. Victoria's Metropolitan Ambulance Service (MAS) introduced a referral service in 2003, to divert lower priority calls to other services such as general practitioners, nursing services and non-emergency patient transport.[6] The number of calls managed by the referral service increased from 5669 in its first year of operation, to 26 528 in 2006–07. The number of referrals grew in a similar fashion, from 3747 to 18 516.[6] In part this reflects growing use of private, non-emergency patient transport services. There are now 14 providers of these services In Victoria,[7] up from an estimated nine in 2002.[8]

Paramedic education and training

The education and training of paramedics is undergoing a significant transformation, from an in-house, post-employment training model to a university-based, pre-employment professional program. Post-employment training programs for paramedics in Victoria have been phased out, with the last cohort of trainees commencing in May 2006.

Victorian ambulance services have been recruiting graduates of university paramedic programs since 2001, and as of 2007, all recruitment is via the graduate pathway. Four Victorian universities offer a total of five courses leading to paramedic qualifications, including two Bachelor degrees, two combined Bachelor degrees (with nursing), and one postgraduate diploma (Box 2). Ambulance Victoria (created by the merger of MAS and Rural Ambulance Victoria in July 2008) also recognises qualifications from four interstate universities (Box 2) and two New Zealand institutions. Ambulance Victoria now provides clinical placements for students in courses run by all Victorian universities, as well as graduate training programs for newly recruited graduates. There is clear variation between courses with regard to the clinical placement experience required.

2 Australian university paramedic training programs recognised by Ambulance Victoria*

Jurisdiction/university	Degree†	First intake year	Duration of degree (years)	Required clinical placement: ambulance service (h)‡
Victoria				
Victoria University	Health Science (Paramedic)	1999	3	360
Monash University	Emergency Health (Paramedic)	2004	3	592
Monash University	Emergency Health (Paramedic)/Nursing	2007	4	586
Australian Catholic University (Ballarat)	Nursing/Paramedicine	2008	4	120
University of Ballarat	Graduate Diploma Paramedicine	2007	1	200
Interstate				
Charles Sturt University (NSW)	Clinical Practice (Paramedic)	1994	3	240
Charles Sturt University (NSW)	Nursing/Clinical Practice (Paramedic)	2002	4	650
Flinders University (SA)	Health Science (Paramedic)	1998	3	364
Queensland University of Technology	Health Science (Paramedic)	2005	3	1125
University of the Sunshine Coast (QLD)	Paramedic Science	2008	3	1200

* Sources: University websites and course administrators. † Bachelors degree unless otherwise specified. ‡ Data provided in days converted to hours by multiplying by 7.5 (totals rounded) and in some cases includes training in simulation settings as well as actual clinical settings. For combined nursing/paramedic degrees, placements in nursing settings are excluded. Queensland degrees (QUT and USC) include a semester of full time clinical work (paid) in the final year (about 450-500 hours).

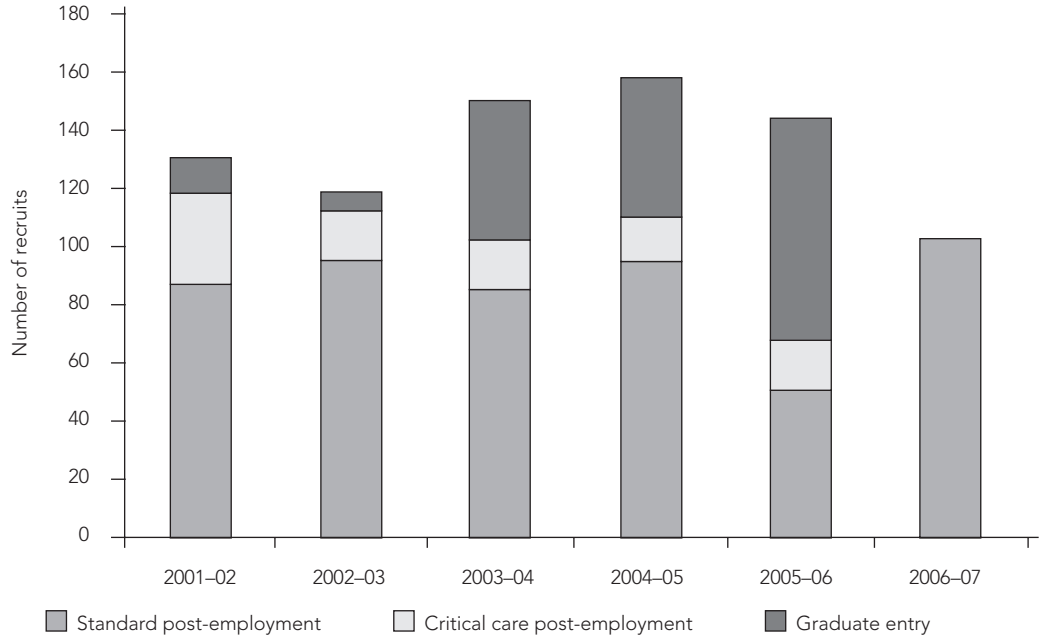
Entrants to the paramedic workforce

A changing educational pathway makes it important to monitor entrants to the paramedic workforce over time. Intake of entry-level recruits by Victorian ambulance services from 2001 to 2007 indicates the shift to the graduate entry pathway. Less than one in ten entry-level recruits to the Victorian paramedic workforce in 2001–02 was university qualified, moving progressively to 100% by 2006–07 (Box 3). Graduations from Victorian university training programs show a high rate of growth during the same period, with almost a fivefold increase in the last 5 years. We estimate a further increase of 31% between 2008 and 2012 (Box 4). Projected graduations were calculated from intakes to training programs and training program durations, adjusted for non-completion,[3] and assuming that intakes remain at 2008 levels in future years.

Professionalisation of the paramedic workforce

The shifts taking place for the paramedic workforce can be framed as part of the process of professionalisation of this group. Key defining features of a "profession" include: expertise in a discrete area of specialist knowledge; autonomous practice; standardised educational preparation, and explicit professional ethics.[9] Paramedics already practise in a largely autonomous fashion, and have expertise in a clearly defined specialist area, that of pre-hospital emergency care and treatment.[10] Like other health occupations that have made the transition to professional status (such as nursing), paramedic practice is beginning to be defined as an academic discipline with its own body of knowledge, its own literature and increasingly its own research base providing evidence for practice. Ethics is a core subject in most university programs, and the

3 Entry-level recruits to Victorian ambulance services, 2001–2007



Sources: Melbourne Ambulance Service and Rural Ambulance Victoria. "Critical care post-employment" refers to Division 1 nurse with minimum 2 years emergency department experience who completed a shorter form of post-employment training.

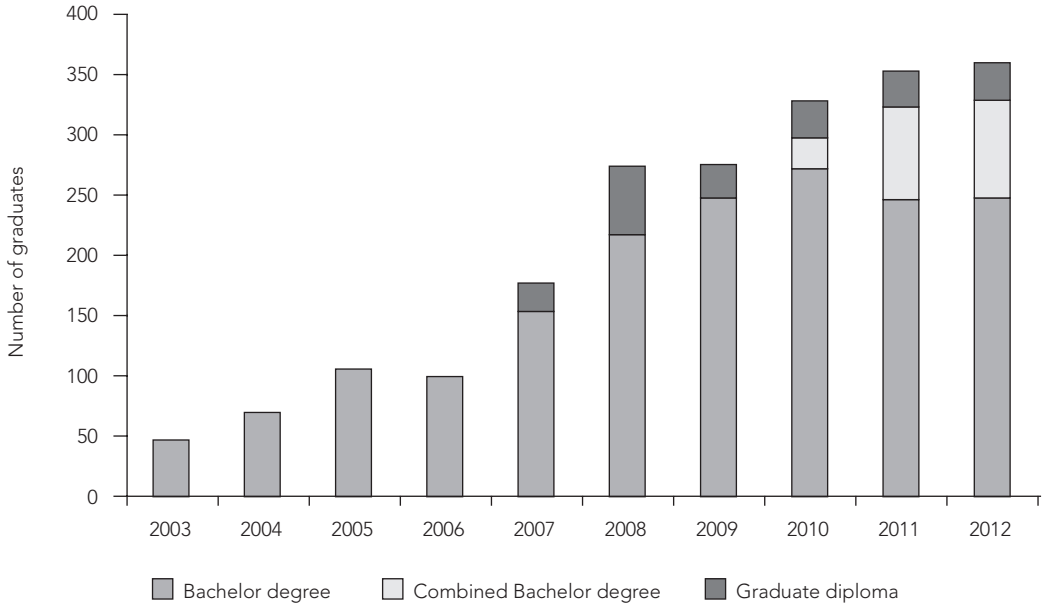
Australian College of Ambulance Professionals (ACAP) has developed a Code of Professional Conduct.[11]

A key marker of professional status is professional regulation, either through registration or other forms of standardised recognition, such as membership of a professional association. In July 2008, the Council of Ambulance Authorities (CAA — the national peak body for ambulance services) released a position statement arguing that registration was unnecessary for paramedics, given existing controls and regulations. They argued that the monitoring and credentialing required of paramedics by their employers was a key aspect that ensured a sufficiently regulated profession.[12]

Mahony has argued that an important element of the professionalisation process is locating control over education and professional recognition with "the profession" (as represented by a professional association) rather than with employers or universities.[10] ACAP's recently released response to the CAA position statement echoes this view, arguing in favour of national standard registration for paramedics.[13] ACAP has developed a voluntary Certified Ambulance Professional program which is intended to serve as a precursor to professional registration, although to date there has been minimal take-up of this program by the profession. ACAP has also commenced work on establishing an appropriate model of regulation for the profession, covering professional standards and ethics as well as recognition of professional status.[14]

The shift to university-level qualifications is part of the development of standardised educational preparation. Also important in this process is a system for accreditation of educational programs. The CAA developed guidelines for accreditation of university paramedic programs which were trialled in 2008.[15] However, in the absence of registration requirements, neither universities

4 Estimated graduations from university paramedic training programs, Victoria, 2003–2012



Sources: University websites and course coordinators. Projected graduations calculated using 7.4% attrition rate,[3] except for one-year graduate diplomas, for which a 0% attrition rate was used. Projections assume intake levels remain at 2008 levels.

nor employers are compelled to limit themselves to accredited programs. At present not all Victorian programs are accredited, and this is not preventing graduates from attaining employment. The marked variation in clinical placement experience between programs is indicative of the current lack of standardisation.

Implications

There are considerable challenges for ambulance services arising from these developments, including having to adapt in-house training to new graduates rather than untrained recruits, as well as supervising students on clinical placement. The substantial increases in paramedic student numbers are likely to place considerable pressure on Ambulance Victoria's capacity to provide clinical placements. Anecdotal evidence from other ambulance jurisdictions suggests similar problems are being encountered elsewhere in Australia, with some courses reducing clinical placement hours in an attempt to accommodate more students.

The increased number of students indicates a growing disparity between supply and demand. It seems clear that not all qualified graduate paramedics will be able to obtain employment with Ambulance Victoria. Where will the "excess" graduates go? Certainly there are now a wider range of opportunities for paramedic graduates. Formerly, ambulance services in each state and territory were effectively monopoly employers offering essentially private training programs, with little or no choice of employer within one location.[10] University qualifications are more portable, but most paramedic students aspire to be employed in ambulance services within their own state.[16] There are also growing opportunities for these graduates beyond ambulance services, including private non-emergency patient transport services, humanitarian organisations, and industry emergency health roles. Our projections suggest that by 2012, almost one-third of Vic-

torian paramedic graduates will hold multiple qualifications, either through completion of a combined degree in nursing and paramedics, or through completing the graduate diploma, for which a clinical health sciences background is a prerequisite. This will further contribute to the development of a highly skilled professional clinical workforce. The prospect of a broader range of employment arrangements, and larger private sector involvement, brings added importance to debates about registration and regulation.

New cohorts of paramedics are likely to be quite different from those currently in the workforce. MAS reported in 2007 that university-qualified paramedic recruits were younger than paramedics recruited under the previous system (average age of 24 and 27, respectively), with a higher proportion of females among new graduates compared with the existing workforce (65% and 40%, respectively).[6] Workforce participation patterns vary predictably between women and men and this can be planned for.[17] The current workforce is predominantly male, and works full time, with frequent overtime. Already, anecdotal evidence is suggesting that newer recruits are less interested in weekend work and overtime.[18] More females and younger recruits suggests that expectations of flexible and family-friendly working conditions will increase, and will require a strategic response if services are to continue to operate effectively. Changed working arrangements (such as more part-time staff) can create more job opportunities, and thus have the potential to absorb some of the increased numbers of graduates. Experience from increased numbers of women in the medical workforce has shown that both women and men in younger cohorts work shorter hours than their older colleagues, and place a higher value on flexibility.[19,20]

A less mature workforce with less life experience working in an inherently risky and stressful job suggests a need for employers to ensure comprehensive support and debriefing services. There are likely to be safety issues relating to young students on clinical placements with the emergency workforce. Concerns have also been raised about bullying and harassment,[13] and in the context of a younger and more heterogeneous workforce, there will need to be formal programs to address these issues.

More recent cohorts are also likely to be more mobile. In stark contrast to the long-term stability of previous cohorts of ambulance service recruits, paramedic graduates are likely to be part of the trend towards "portfolio careers", involving transitions not just between jobs but also across traditional occupational boundaries.[21]

One challenge associated with the move to a university-based education program is funding levels. Funding for paramedic degrees by the federal government is currently not aligned with funding levels for other clinical disciplines such as nursing and medicine despite similar operating costs. Another issue is the potential to widen the gap between employer and educator. Although effective relationships between the service providers and the universities already exist, strengthened by a memorandum of understanding, new ways of working together will need to be established in this changed context. One way of doing this would be joint clinical and research centres which create a nexus between teaching, training, research and service provision. This would help to ensure ongoing involvement of the service providers in the development of community emergency health and paramedic practice as an academic discipline.

A final issue is the need for a national, government-led approach to workforce planning. To date, workforce planning for paramedics has been undertaken by ambulance services individually in the context of their regular service planning, which in turn is constrained by the annual budget cycles of state governments. The time has come to bring planning for the paramedic workforce in line with other health professions. This includes monitoring and analysis of the size and characteristics of paramedic workforce supply, and of current and likely future demand. In medical workforce planning, failure to take into account changes in workforce demographics and working patterns has led to inaccurate projections of future supply. These lessons need to be brought to bear in paramedic workforce planning. For example, if we assume that 65% of new cohorts of paramedic graduates

are female,[6] and that the gap between the average working hours for female and male paramedics is about the same as that observed in the medical workforce (a ratio of 81.4% — 37.6 compared with 46.2 hours per week),[22] then we can calculate that this reduces the effective supply of each cohort of graduating paramedics by 12%, compared with an entirely male cohort. This might reduce any oversupply, but only if ambulance services increase their recruitment levels. More detailed collection and analysis of paramedic workforce data is vital for effective planning.

Conclusion

Developments currently taking place in the paramedic workforce highlight several issues that should be addressed as a matter of priority. There is a clear need to continue progressing standardisation of education and training programs, and moving towards professional regulation. Greater clarity is needed in relation to both career structure (to take into account the likelihood of a more mobile workforce, between jobs, services and roles), and the role of the paramedic in relation to the broader health system.

In a climate of workforce innovation with the development of new roles such as emergency nurse practitioners[23] and physician assistants,[24] it is important to clearly define the scope of practice of the paramedic professional and to consider the range of potential career trajectories for paramedic graduates. Given that it seems likely that, at least in Victoria, supply of paramedic graduates will exceed demand, further thought should be given to how the skills of this group can be effectively utilised within the health system. Finally, an integrated, national approach to workforce planning is needed to ensure that future inflows to supply match with forecast demand. Addressing these issues will ensure that the paramedic workforce is included in current developments in health system and health workforce reform.

Competing interests

The authors declare that they have no competing interests.

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