Paramedicine models: the future for rural and remote Australia

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Abstract

For the past 50 years paramedic services and paramedic roles have successfully evolved in response to changes in community needs and expectations. This has seen a transformation from often voluntary, semi-skilled roles to paramedics who have professional education, broad scopes of practice and acceptance as health professionals. Paramedics and the organisations they work are now expected to respond to health system changes and the changing values and expectations of communities through the continuing development of new and innovative models of care.

During the 1950s and 1960s, the volunteer/transport model based on the values of community self-reliance and control, developed in communities to meet local needs for transport to local hospital and medical services. This model has been enhanced and still exists in many parts of rural and remote Australia. The technological model, characterised by professionally staffed and managed ambulance systems providing pre-hospital care based on the medical model including advanced technology and technically-skilled staff, is currently the dominant model in urban and regional settings health systems.

We are now observing the emergence of paramedic practitioner models that are part of integrated pre-hospital systems that provide a range of services to prevent injury and illness, respond to emergencies and facilitate recovery, and aim to produce a healthy community in collaboration with other health professionals. These practitioners, often referred to as extended care paramedics or community paramedics, are working in some Australian States and are more established in parts of Canada and the United States.

This new role places paramedics within an integrated healthcare system, with them sharing roles with other health professionals that best utilise their skills and knowledge. Movement toward a wider implementation of the paramedic practitioner model raises many policy and practice issues, including changes in scopes of practice, the design of education programs, and the self-regulation of a new health profession.

Australian Ambulance Services and Paramedics

For the past 50 years ambulance services and paramedic roles in developed countries have successfully evolved in response to changes in community needs and expectations. This has seen a transformation from often voluntary, semi-skilled roles to paramedics who have extensive professional education, broad scopes of practice and acceptance as health professionals.[1-3] Like other health services in rural and remote locations, Australian ambulance services face the challenges of establishing and maintaining services to meet the changing needs of communities that often lack the infrastructure and services that are taken for granted in metropolitan and regional locations. One distinguishing feature of many rural and remote ambulance services is the deployment of large numbers of voluntary staff and first responders.[4-6]

Paramedics and their employers, who are not always the statutory ambulance services, are expected to respond to health system changes and the changing values and expectations of communities through the continuing development of new and innovative models of care.[7] Standing still and

continuing to provide the same services as in the past is not a viable or acceptable option.[8] In response to demands for high quality services, Australian ambulance services have invested heavily in rural and remote areas, employing more clinical staff, extending first responder programs and establishing new ambulance stations. They have been hugely successful in reducing mortality related to cardiac arrest and major trauma in more densely populated areas.[9]

Less obvious has been evidence of well-developed strategies to address the complex needs of an aging population in the resource-poor settings typically found in rural and remote Australia. In other comparable countries, extended and innovative paramedic roles have emerged to address these challenges. These models have a variety of names, with the best known described variously as extended care paramedics (ECP), community paramedics (CP) and mobile integrated healthcare. In Australia, a number of statutory ambulance services have conducted trials of ECPs,[10] while others have introduced versions of the CP model.[11] The mobile integrated healthcare model is largely confined to the United States where it is used as a strategy to deal with a highly fragmented health system.

The aim of this paper is to review relevant paramedic models of service delivery, with an emphasis on emerging models that have the potential to improve the health and well-being of Australian rural and remote populations. A narrative review was undertaken to identify past, present and future paramedic models that have relevance to rural and remote Australia. The databases searched were CINHAL and Medline as these were judged to be the most likely to yield useful results, while key paramedic-specific journals were individually searched in the event that they were not indexed. Search terms were ambulance, paramedic and EMS. These were then combined with model* and rural, remote and frontier. Citation lists were then examined to identify other resources in both the peer-reviewed and grey literature. The search was restricted to English language papers from the year 2000 to ensure that only contemporary papers were identified. The findings were then synthesised into a narrative review.

Established Paramedic Models

During the 1950s and 1960s, the volunteer/transport ambulance model, based on the values of community self-reliance and control, developed in communities to meet local needs for transport of the sick and injured to local hospital and medical services.[2,12] This model has been enhanced and still exists in many parts of rural and remote Australia. The technological model, characterised by professionally staffed and managed ambulance systems that provides prehospital care based on the medical model including advanced technology and technically-skilled staff, is currently the dominant model in urban and regional settings.[13] More recently, the emergence of paramedic practitioner models in various forms suggests that paramedics are able to contribute to the success of multidisciplinary healthcare teams that aim to make a sustained and positive impact on the health and well-being of rural and remote populations.[14,15]

Ambulance services in Australia and throughout the world have a long history, with most boasting direct links with St John, along with less obvious military connections. This shared history of volunteerism and a military command and control culture has greatly influenced the evolution and day-to-day operation of ambulance services.[16] At a community level, this resulted in a volunteer model of service delivery that was community controlled and operated to meet the prehospital expectations of a local community, resulting in the community feeling safe and secure. This model continues in most Australian ambulance services through the deployment of volunteer ambulance officers and increasing numbers of first responder programs.[5,17] For many decades, this volunteer model based on

community self-reliance and control was highly valued and delivered on the expectations of the local community.

With changes in community expectations, paramedic education and organisational capacities Australian ambulance services have evolved to the point where the deployment of professionally trained and paid staff, centralised dispatch centres and standardised clinical practice guidelines is the norm in larger population centres.[4] In metropolitan and regional centres across Australia the dominant ambulance service delivery model is the technological model, which is based on the medical model and is characterised by sophisticated management systems and the employment of full-time, professionally trained personnel who have access to the latest bio-medical equipment and who practice a high level of clinical intervention.[18] This model is expensive to establish and maintain due to the level of technology required and its extensive education and training needs.[4] On the positive side, the technological model is very successful and has resulted in a significant reductions in mortality and morbidity rates for populations suffering from cardiac arrest and major trauma.[19]

The technological model is based on the notion that the specialised health professionals, through their training and experience are best able to determine the needs of the community. At its extreme, there is a view that letting patients, communities and other stakeholders have a direct say would distort priorities and result in less than 'best practice' standards.[20] There is a risk this worldview may result in a paternalistic attitude to the community and other health workers, with the result that they could become estranged from the wider community and health system.[1]

Evolving Paramedic Models

When considering the strengths and weaknesses of the well-established volunteer/transport and technological models in the context of ageing populations and sometimes fragmented health systems there is an apparent need for an alternate paramedic model of care. This recognition has seen the emergence of ECPs in the U.K., New Zealand and parts of Australia.[21,22] While in North America, the concept of the CP has emerged and programs have been extensively implemented.[23-25] In reality, these two models share characteristics and objectives, most clearly illustrated in their desire to avoid unnecessary ambulance transports and hospital admissions. Changes in dispatch centre triaging is another related ambulance service strategy to better manage growing demand for ambulance services.[26]

The main difference between the ECP and the CP lies in how and when they intervene in the patient journey, with extended care paramedics remaining essentially reactive and assessing and treating patients who have requested an ambulance. Community paramedic roles are more strongly aligned with a public health approach that involves a set of interventions both before and after the standard paramedic cycle of care.[27,28] Both roles share the need for a broader knowledge base, enhanced skills and well-developed clinical decision-making competencies.[29] They are both examples of the emerging paramedic practitioner model.

Paramedic practitioner models are one of the essential components of integrated prehospital systems that aim to provide a range of services to prevent injury and illness, respond to emergencies and facilitate recovery, which then results in a healthy community. Advocates of paramedic practitioner models have the view that prehospital care as an integral part of an integrated health care system, with professional staff sharing roles that best utilise their skills and knowledge.[30] These practitioner models are flexible and provide either an emergency 'safety-net' system or an advanced clinical care system, responding to emergency needs, combined with an integrated public health role that is

closely linked to the broader health system. Paramedics have a key role in promoting healthy lifestyles, and preventing death and injury through public education programs.[30]

The two distinctive characteristics of paramedic practitioner models are the existence of a research and development agenda, and the multiple decision-points that exist during the cycle of care. The practitioner model is arguably more cost-effective than the technological model, while continuing to provide an appropriate level of clinical care for any given community. It is particularly suited to rural areas with high ambulance 'down-time' and a dearth of other public health workers.[29]

Of particular interest to rural communities is the emergence of community paramedics, with emerging evidence supporting the notion that CP could form a new model of care that addresses some of the reform needs in the health sector.[14,27,32-34] This emerging model of care is a community-focused extension of the traditional emergency response and transportation paramedic model and is potentially attractive to rural and remote communities that face the dual challenges of aging populations and stressed health systems. At another level, the CP model will contribute to the re-calibration of paramedic roles and professional identity.

For the rural and remote communities CP programs are able to fill identified gaps in the healthcare system by expanding the roles of paramedics and other ambulance service staff such as volunteer ambulance officers, and providing flexible services designed to meet the needs and resources of the local community. Typical CP program services include:[14,26,34]

- care management and home visits
- falls prevention
- medication management and compliance
- geriatric pathologies (diabetes and COPD)
- palliative care
- phlebotomy
- immunisation
- wound care
- community referrals
- home assessments.

Drivers of Success

Successful CP programs are driven by the combined efforts to improve and maintain the health and well-being of community members, they are integrated with local health systems, have viable treatment and referral options for sub-acute and chronic patients, are built on broad paramedic education and have inclusive governance systems.[15] Wider implementation of CP models in rural and remote Australia faces a number of potential barriers, such as the need to broaden paramedic scopes of practice, consideration of paramedic prescribing rights, review of paramedic education, the impact of paramedic professional self-regulation, and consideration of the future roles of volunteer ambulance officers.

CP program implementation would challenge Australian ambulance services to move beyond their perceived 'core roles' that classify non-emergency patients as some-one else's problem. This change

in orientation will require ambulance services and paramedics to take a more patient-centred approach to service delivery and to strengthen their community engagement activities.[8,27,35]

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Presenter

Prof Peter O'Meara is an internationally recognised expert on paramedicine models of care and education. He was one of the first paramedics in the world to complete doctoral qualification researching paramedicine and is a Fellow of Paramedics Australasia. He is Professor of Rural and Regional Paramedicine in the LaTrobe Rural Health School, Bendigo, with overall responsibility for the development of an innovative four-year paramedicine degree program. Peter's research has focused on the delivery of paramedic services in rural settings and the development of paramedic extended scope-of-practice roles, in particular the development and implementation of community paramedicine throughout the world. In the field of paramedic education, he has focused on field and clinical placements. His over-riding passion is the emergence of paramedicine as a health profession in Australia and other parts of the world.