

Australian Centre for Prehospital Research




THE UNIVERSITY
OF QUEENSLAND



An exploration of
**expanded paramedic healthcare
roles for Queensland**

Steve Raven, Vivienne Tippet, Jon-Grant Ferguson, Somma Smith



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September 2006

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Foreword by the Commissioner Queensland Ambulance Service

I am pleased to introduce this monograph publication, which explores expanded paramedic healthcare roles and alternative models of health service delivery. This project is the first of its kind in Queensland, providing a broad-based review of international expanded scope paramedic practice programs and a description of more advanced generic healthcare provider roles that have been trialled and implemented overseas. This is an important initiative by the Queensland Ambulance Service that will help guide the development and implementation of an expanded scope of practice for paramedics and alternative healthcare pathways to improve the health services provided to Queenslanders.

Ambulance Services worldwide are increasingly playing wider community healthcare roles. In recent years the capacity for ambulance services to make a significant contribution to improving health services by expanding their role beyond providing emergency prehospital care has been recognized. In the Queensland Ambulance Service we are continually improving our standard of patient care through innovative service delivery schemes, ensuring that the services we provide meet future public expectations. Expanding paramedic practice beyond the emergency setting is an important progression, and will increase the profile of ambulance services in providing public healthcare.

Queensland paramedics are dedicated and professional in their approach to providing emergency prehospital care. Their clinical skills are of a world class standard. Paramedics working in rural and remote settings have demonstrated a capacity and willingness to further develop their knowledge base and skills in order to provide an even greater standard of emergency and ongoing care to their communities. The implementation of appropriate expanded practice programs will significantly improve healthcare and progress the professional standard of ambulance paramedics.

Rural and remote locations provide the ideal setting in which to instigate expanded roles for paramedics, given the challenges faced by health services in providing equity in access to healthcare services in these areas. Our vision for the future of ambulance service provision in these areas includes: continued high quality emergency prehospital care; support for people with chronic medical conditions; on-scene diagnostic services; and promotion of preventative health schemes. For the future we envisage a greater involvement by the ambulance service in delivering highly efficient and dynamic prehospital healthcare that meets the needs of our changing communities.

We have an opportunity to contribute to improving the standard of healthcare delivery and access to basic healthcare needs, especially in rural and remote locations. We look forward to working through the challenges of implementing an expanded role for our paramedics in improving health services for all Queenslanders.

A handwritten signature in black ink, appearing to read 'Jim Higgins'.

Jim Higgins ASM
Commissioner
Queensland Ambulance Service

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Executive summary

Australia enjoys a world class standard of healthcare, however faces major challenges to maintaining equitable access for some sections of its population. This is particularly pertinent to rural and remote areas where equitable access to health resources lags significantly behind that of metropolitan centres.

The difficulty in maintaining health care equity is exacerbated by several factors. These include the rising cost of health care, increase in the prevalence of chronic disease requiring greater health resources, a national and global shortage of doctors and other healthcare workers, and a reluctance by many health workers to serve in rural and remote communities due to perceptions of being disadvantaged.

The health status of Australia's Indigenous people is significantly lower than that of the general population. Improving the health outcomes of the Indigenous population is a key indicator of the effectiveness of health care reforms. A relationship between access to health care and health outcomes has been demonstrated.

In response, various initiatives have been introduced by state and federal governments to improve healthcare by bolstering the number of health care workers serving in rural and remote communities and improving health infrastructure. This strategy has gone some way to improving healthcare access, but further reform has been advocated.

In recent years, a review of health care delivery models, and the development of generic health care worker roles has been supported by health care reform analysts and in various state and federal health policy documents. Expanded scope programs such as NPs have been shown to improve healthcare delivery, providing people in rural and remote communities greater access to routine procedures, advice and follow up care. The evidence from recent evaluations of NPs suggests this model has improved health outcomes and has been widely accepted, with a high level of patient satisfaction.

Paramedics serving in some rural and remote communities have engaged in various expanded practice activities in an unofficial capacity and have demonstrated interest in formally developing these roles. There is potential to further extend the capacity of health services by exploiting this opportunity to formalize and expand paramedic expanded practice roles, and by developing generic health worker models.

A review of paramedic expanded practice programs trialled in the USA, Canada, and the UK, and of subsequent evaluation studies was conducted. The diversity of these programs partly reflects the purpose for which they were designed and have been tailor made to meet local community needs. The successes, failures, and challenges worked through in developing these programs are presented. Many of these programs have been demonstrated to improve community health outcomes while remaining economically feasible, and have achieved community acceptance and high levels of satisfaction.

The Physician Assistant (PA) model, widely used in the USA for many years and currently being implemented in several other western countries was reviewed. A review of PA evaluation studies showed that health services provided by PA's achieve similar levels of patient health outcomes and levels of satisfaction to those provided by medical officers, with a significant cost saving.

These models should be used to help inform the development of expanded practice roles and new healthcare models in Australia. The possibility for expanded practice development is briefly explored, challenges are identified and recommendations are made for further exploration and the creation of new and expanded practice roles.

Introduction

Purpose of this report

The primary purpose of this report is to present various options for developing an expanded scope of practice for ambulance paramedics in Queensland. Evidence is presented to support the argument that there is a need to explore alternative healthcare models beyond those already in practice, to help take up the shortfall in healthcare provision due to factors emerging in recent years here in Australia and globally. An examination of various innovative expanded scope of practice models trialled in the USA, Canada and UK, focusing on model development, implementation and evaluation is undertaken. In addition to this, a review of the broader scope Physician Assistant (PA) model, successfully employed for many years in the USA, is undertaken. The capacity for paramedics to take on expanded health care roles is examined. Areas in need of further investigation are identified and recommendations on the direction for expanded scope model development for Queensland Ambulance paramedics and other health care workers are then made.

Method

Database searches were conducted for articles published in peer-reviewed journals, relating to research and dialogue on expanded scope model development, trials and pilot schemes, and evaluations of various models. Several reports and evaluations were obtained by contacting individual ambulance trusts in the UK directly via various methods of correspondence. A UK national Emergency Care Practitioner (ECP) pilot evaluation was obtained from the University of Sheffield website. Internet searches for expanded practice models in the USA, Canada and the UK using various search terms were conducted. Searches were made through government health websites in Australia and overseas for relevant health workforce planning literature. An exploration of current expanded practice activity by paramedics in rural and remote Queensland areas was conducted to determine the extent to which this is already occurring in these areas.

Chapter 1

Assessing the need for expanded practice roles

1.1 Introduction

Maintaining an adequate health workforce is an important issue gaining increasing attention at national and state level in recent years. The growing financial pressure on the health system and a significant shortage of health professionals especially in the public health sector has forced a consideration of alternative models of providing healthcare. This is especially important for those areas in which the shortage of health workers is of greatest concern, most notably in some rural and remote communities. The maldistribution of available healthcare resources has tended to disadvantage people living in these communities and attempts at addressing this inequity have been the focus of various health authorities for some time.

In recent years several federal and state government health policy documents have recognised the need for health reforms, and some have called for an expansion of health care roles to help deal with the shortage of health workers. This chapter examines the current state of the health workforce and factors affecting healthcare demands in Australia, with a focus on Queensland. Chapter 2 reviews literature on expanded practice discourse and explores various expanded practice models that have been trialled overseas. Chapter 3 briefly examines the Physician Model, used successfully in the USA for many years and recently adopted in other countries. In Chapter 4 the suitability of these models for implementation in Queensland is considered.

1.2 Shortage and maldistribution of the health workforce

There is currently a shortage of health professionals across Australia and its greatest impact is felt in rural and remote areas. Although the number of medical professionals trained in Australia has increased substantially in recent years, factors such as a reduction in the number of hours that doctors are willing or able to work due to safe working hours policies (Brooks, Lapsley & Butt, 2003) and losses to outside workforces (Ridoutt, Gadiel, Cook & Wise, 2002) has resulted in a sustained shortage of doctors and allied health workers, especially in the public health sector. A further reduction in working hours is partly due to an ageing health workforce and greater participation of those wishing to work on a part-time basis. The average age of health care workers is increasing and therefore increasing the rate of exit from many parts of the health workforce (Productivity Commission, 2005b). The rate of health worker exit from the workforce is expected to increase in coming years as the workforce ages. People entering the health professions are increasingly choosing to work part-time and flexible working hours to suit their lifestyle and commitments (Ridoutt et al. 2002). All of these factors have resulted in a reduction of health workforce hours and workforce numbers, making the task of maintaining, let alone increasing health provision extremely difficult.

There is also considerable variation in the distribution of health workers across Australia. For example, the Productivity Commission (2005b) paper identified that the GP to population ratio in remote communities is less than half of that in major metropolitan areas. There is a heavy reliance on overseas-trained temporary resident doctors to fill non-specialist hospital positions in rural areas (Australian Medical Workforce Advisory Committee, 1999). The major cause identified as contributing to the relative under-representation of the health workforce in rural and remote areas is a reluctance of health workers to take up these positions due to various factors that include:

- perceptions among some health professionals that remuneration levels are lower and prospects for advancement and professional development are fewer in rural and remote areas compared with urban areas
- perceptions that professional demands are greater on rural and remote practitioners in terms of expected levels of performance and commitment, heavier workloads and a reduced availability of supporting health care infrastructure
- lifestyle concerns relating to poor community infrastructure such as housing, education, transport, and reduced employment opportunities for spouses
- training and education opportunities for health workers may be significantly reduced in rural and remote areas.

These factors present significant barriers to the equitable distribution of health workers (Productivity Commission, 2005b). They are recognised as contributing to the difficulty in attracting and retaining health workers to rural and remote areas. The current health worker shortage and maldistribution is a problem that is more than cyclical in nature (Productivity Commission, 2005b). It seems unlikely that the problem of poor access to health services by people living in rural and remote communities can be easily addressed. Health services will likely continue to be concentrated in more densely populated areas to provide access to the greatest number of people possible.

1.3 The increasing healthcare demand in Australia

The shortage in health professionals is expected to worsen in coming years while most forecasts have projected a substantial increase on demands for health services. Factors responsible for the projected increase in demand for healthcare include advances in health technology, a growing consumer expectation of being able to access those new technologies and an increase in chronic diseases (Productivity Commission 2005b). Advances in health technology are providing an increasing range of higher-quality health services and procedures to treat and prevent disease and promote recovery. As these new technologies become available and people become more aware of healthcare issues, and more discerning, their expectation to be able to access these services will also increase. As incomes rise people will also generally spend more on health care and seek higher-quality health services. Diseases such as diabetes will increase (due to sedentary lifestyles) as will the incidence of stroke (smoking and poor diet) and dementia (ageing population). There will be a progressive orientation to dealing with chronic

diseases. The ageing population will compound the underlying growth in health service demands arising from income growth and technology. Older health consumers generally account for a disproportionately greater share of health resources (Queensland Health, 2001). By 2045 the percentage of the population that will be aged over 65 is projected to be 25 per cent, which is double the current level. An ageing population will also generate an increasing demand for the management of chronic diseases (Productivity Commission, 2005a).

People living in rural and remote areas have a poorer standard of health and less access to health care than that of corresponding urban dwellers (Humphreys, 1999). They have higher rates of injury-related mortality, homicide and suicide, and higher rates of coronary heart disease and diabetes. The shortage of health resources in rural and remote communities has forced a reduction in the services that are provided. The emphasis of rural health services is on treatment rather than prevention of illness and injury. Rural GPs have by necessity concentrated on illness treatment rather than wellness promotion (Smith & Hayes, 2004). Prevention is an important component of health that cannot easily be addressed in a climate of significant health service deficiency.

1.4 Exploring new models of health care

Recent health strategy documents have proposed that public health workforce development should put social needs at the core of workforce planning (Australian Health Ministers' Conference, 2004; Productivity Commission, 2005b; Ridoutt et al., 2002). However, Ridoutt, Gadiel, Cook & Wise (2004) have asserted that workforce planning has not historically been linked to the implementation of specific work programs or to the achievement of explicit outcomes. They recognised that although there is widespread agreement regarding the essential functions of the health care sector, there is no standard of satisfactory infrastructure, access to healthcare or minimum set of core functions to be performed by a given public health organisation. To ensure the health of the population each organisation within the healthcare sector must consider a wider public health perspective beyond their own function to provide seamless and efficient healthcare, while minimising waste and duplication of services. Future public health strategies also need to be more proactive in focus. Ridoutt et al. (2004) have argued that current workforce planning is based not only on rational evidence based planning, but on historical funding decisions, current funding sources and opportunities, unpredictable demands and by the personal skills and interests of the workforce. They have suggested there needs to be a more proactive approach to workforce planning, with a shift in focus on identifying, treating and caring for people with illness, to include illness and injury prevention strategies and promoting general health and well-being.

Changes to Australian health service workforce planning need to place a stronger emphasis on issues of workforce substitution. Several recent reports draw attention to the fact that further expanding intakes into health professional courses will not be sufficient to meet the emerging needs (Australian Health Ministers' Conference, 2004; Duckett, 2005a). Widening the scope of practice of health care professionals and allied health workers is recognised as one way of helping to address health worker shortages

(Productivity Commission, 2005b). Duckett (2005b) has argued that Australia needs to move beyond planning for particular professions and health workforce planning needs to be based on skills shortages. The Australian Health Ministers' Conference (2004) report has identified that changes to existing workforce roles will be necessary and has called for an exploration of opportunities to maximise the flexibility of the workforce, including innovative approaches to skill mix and new workforce roles, and changes to scope of practice. The development of any new models of health care should place an emphasis on interdisciplinary teamwork and coordination to more effectively address the needs of health care consumers (Duckett, 2005a).

In order to grow a more flexible workforce, significant changes will need to be made to the way health workers are educated and trained. Greater emphasis will need to be placed on training health workers to deal with the management of chronic illness, expected to increase substantially as the population ages. This will require a different set of competencies to those that are required to care for acute conditions (Pruitt & Epping-Jordan, 2005). Allied health workers like paramedics have been trained to deal mainly with acute medical and trauma conditions and will need to acquire new chronic disease management skills and a greater depth of medical knowledge if they are to be included in expanded scope programs.

The logistics of providing appropriate teaching programs also need to be considered. There may be reluctance by universities to support teaching programs for models that are very limited in scope, or delivered to only a small number of students. Conversely, large-scale expanded scope ambitions would require substantial teaching resources. Current health education arrangements for the most part do not allow for interdisciplinary cooperation and sharing of education resources. The Productivity Commission (2005b) report has recommended a staged move toward a single consolidated national accreditation agency for university-based education and training and postgraduate training, subsuming existing accreditation functions as part of this process. This would provide the basis for nationally uniform registration standards for health workers, reduce costs and inconsistencies arising from multiple accreditation agencies and lend further impetus to across-profession consideration of workplace innovation and job design issues.

The inflexible demarcation in the health professions is a serious impediment to role substitution and the development of expanded roles and new models in healthcare (Productivity Commission, 2005b). These boundaries are defended within the medical profession by powerful interest groups, and reinforced by their regulatory bodies that have, among their priorities, the interests of its members to consider in forming policy. The argument most commonly put forward by the medical profession, as justification for such rigidity, is that implementing expanded practice roles for allied health workers has the potential for compromising public safety. Public safety issues must be carefully considered in the process of creating new healthcare roles. However, it should not prohibit the development of expanded roles and new models that have a potential for significantly improving the availability and range of health services.

1.5 The state of health in Queensland

Queensland is Australia's most decentralised state. It has the most geographically dispersed population in Australia with 22.3 per cent of the population living in outer regional areas compared to 13.5 per cent nationally (Queensland Government, 2005). This poses significant logistical challenges to providing equity in health care across the state. It is the fastest growing state in Australia, with a current population of about four million that is predicted to grow to 4.8 million by the year 2021 (Australian Bureau of Statistics, 2006). Despite this expected growth the workforce participation growth rate is expected to slow significantly over this period (Queensland Health, 2002). This will pose a significant challenge for the health care industry because it is anticipated that there will be fewer people to care for more patients.

The life expectancy of the Queensland population is increasing and is currently one of the highest in the world. The proportion of the population aged over 60 is expected to grow from 15 per cent in the year 2000 to 26 per cent in 2031. Health differentials are found between specific population subgroups in Queensland. These subgroups are identified along levels of socioeconomic disadvantage, levels of accessibility and remoteness, categories representing Aboriginal and Torres Strait Islanders, and gender (Queensland Health, 2001).

Queensland's population has one of the highest percentages of Indigenous people in Australia, with a large proportion living in rural and remote locations. The comparatively poor health status of this group is well recognised and the difficulty in efforts to address this are complicated by poor access to health services. The introduction of relatively basic healthcare monitoring and illness and injury prevention initiatives into remote communities have been shown to substantially improve health within those communities (e.g. Misner, 2003).

1.6 Queensland medical workforce

Queensland has the lowest number of registered doctors per head of population of any state or territory. The number of Queensland doctors per 100 000 population decreased from 236 in 1997 to 220 in 2002. The Queensland Health (2005c) Issue Paper for Bundaberg Hospital Commission of Inquiry reported a projected shortfall of 478 doctors in 2006, expected to increase to 993 in 2010, which includes a reliance on importing overseas trained doctors. Since health worker shortages are currently being experienced in most first world countries, the opening up of the global health market will place further strain on medical workforce numbers (Queensland Health, 2005c). The high rate of immigration of doctors from third world to first world countries is placing a great deal of strain on third world health services and is unsustainable (Dussault & Dubois, 2003).

The difficulty in attracting doctors to rural and remote areas at a national level is also an issue for Queensland despite the introduction of initiatives designed to mitigate this problem. Acknowledging this difficulty, authorities have advocated the development of expanded scope of practice for other health professionals such as nurses and paramedics, allowing them to take on some of the more routine

roles that are usually performed by doctors (Queensland Health, 2005d). However, similar problems in recruiting and retaining staff in some rural and remote locations are also found for nurses and paramedics (Queensland Government, 2005). Compounding these shortage problems is the limited ability to backfill when incumbents are on leave or apply for temporary relief from their positions. Role expansion programs in rural and remote areas would allow existing health workers to help alleviate some of the healthcare burden. However, there remains the broader issue of recruiting and retaining workers in rural and remote locations. There may be a need to consider providing greater incentives to allied health workers to work in rural and remote areas.

Queenslanders' expectation about accessing quality safe healthcare regardless of where they live is increasing and people are becoming less tolerant of medical errors and waiting to access services. The Queensland Government document *Smart State: Health 2020* (Queensland Health, 2002) identified the need to place a greater emphasis on primary health care and care in the community. To achieve this the use of multi-disciplinary teams comprising health workers from a range of backgrounds working together to deliver integrated services is envisaged. This would require increasing the numbers of health workers working in non-traditional health care roles and environments. Among those who potentially stand to benefit the most from the development of expanded practice models are people in rural and remote communities. Aboriginals and Torres Strait Islander populations are over-represented in these locations and fare poorly in health status compared with the general population.

1.7 Indigenous health

In Queensland there are two large groups of Indigenous peoples, Aboriginal and Torres Strait Islanders. Queensland is home to 27 per cent of Australia's Aboriginal and Torres Strait Islander peoples, with 3.1 per cent of the state's population identifying as Aboriginal or Torres Strait Islander. Thirty-nine per cent of the Aboriginal and Torres Strait Islander population is under the age of 15 compared with 21 per cent of the general population (Australian Bureau of Statistics, 2006). Only 2.8 per cent of the Aboriginal and Torres Strait Islander population is aged over 65 years, compared with 13.9 per cent of the general population.

The Australian Bureau of Statistics (1997) states that 53 per cent of Aboriginal men and 41 per cent of Aboriginal women will die before reaching the age of 50. The health status of Aboriginal and Torres Strait Islander people in Australia is unacceptably low. Indigenous Queenslanders currently experience levels of health which are significantly below that of the population as a whole. The poor health status of our Indigenous peoples is demonstrated by several health measures including life expectancy, child mortality, birth weight and general morbidity (Queensland Health, 2005a).

Queensland Health (2001) comments that Aboriginal and Torres Strait Islander people have considerably worse mortality and hospital separation rates due to chronic diseases including coronary heart disease and type-two diabetes, infectious diseases such as pneumonia and influenza, and injury and poisoning. The major causes of death of Indigenous Queenslanders are:

- heart disease: 5 times higher than the general population
- diabetes: 17 times higher
- chronic respiratory disease: 5 times higher
- pneumonia: 10 times higher
- accidents: 3 times higher.

Numerous health determinants also have a significant impact on the health status of Aboriginal and Torres Strait Islander people in Queensland and these include:

- poor diabetes management
- overweight and obesity
- poor nutrition
- physical inactivity
- harmful alcohol consumption
- high blood pressure
- poor blood cholesterol management
- risk and protective factors for mental health.

Much of the excess burden of disease is associated with health risk factors such as overweight and obesity, hypertension, high blood cholesterol and hyper-insulinemia. These are mediated by behavioural risk factors including poor nutrition, particularly inadequate dietary intake of vegetables and fruit and excessive intake of energy-dense nutrient foods.

It is important to note that many of the factors that contribute to the current Indigenous health status can be considered in terms of cause and effect of poor health. Poor health is recognised as a significant hurdle to Aboriginal and Torres Strait Islander people being able to fulfil their potential and enjoy a good quality of life. Queensland Health's Aboriginal and Torres Strait Islander Health Policy (Queensland Health, 2005a) identifies the importance of primary health care facilities.

Primary health care facilities remain the main source of health care for those living in Indigenous communities – particularly those living in remote locations. The holistic nature of primary health care allows it to address some of the broader issues of Indigenous ill health. Because of this, primary health care is recognised as the best practice model for the health service provision in Indigenous communities (Queensland Health, 2005a). Well trained and competent staff remains the foundation for providing quality health care to Indigenous communities. However, attracting and retaining staff to remote Indigenous communities is challenging. The remote location and the lack of access to some amenities often contribute to this difficulty.

There is still significant potential to further improve the public health of our Indigenous communities by targeting the underpinning causative factors that determine health status. Improving the health status of Aboriginal and Torres Strait Islander communities not only requires the use of clinical facilities that enable

comprehensive primary health care services to be provided in a culturally appropriate manner but more importantly flexible and innovative health care delivery models e.g. extended care models, that increase the capacity and position of existing staff within the community.

Extended care models should encompass a shared responsibility with the community, supporting the community with the purpose of identifying important health care needs whilst empowering the community to address these issues of importance, and facilitate the process to achieve positive health care outcomes. Focus initiatives targeted at health risk behaviours and outcomes should be a main objective when considering the use of extended care models in these communities and training within these areas a priority. Four main areas that deserve particular attention in the Aboriginal and Torres Strait communities are:

- men's health-the objective is to provide culturally appropriate services targeted at men's health issues, to raise awareness of the unique needs of Aboriginal men and to create a service that is separate from the women to encourage men to attend
- women's health-the objective is to provide culturally appropriate services targeted at women's health issues to improve the health status of Aboriginal and Torres Strait Islander women as well as raising the standard of health and wellbeing through the provision of advice
- early intervention programs-the objective of this program is to improve pregnancy and birthing outcomes, whilst providing culturally appropriate care to help parents make the healthiest choices for their child
- diabetes management-the objective of this program is to screen all Indigenous peoples aged over 18 years, all pregnant Aboriginal women in their first trimester of pregnancy and post-pregnancy, managing all other diagnosed cases of diabetes, and obtaining data collection with a system of recall to provide the best possible outcome for individuals and communities.

It is important that the concept of preventative health interventions be recognised in the provision of health care delivery within Indigenous communities. Health care delivery will need to be able to accommodate a wider range of activities and reflect this focus of holistic community well being (National Aboriginal Health Strategy Working Party, 1989).

1.8 Expanding Queensland health workers' scope of practice

The need to investigate new models of health care delivery to help fill the growing gap between demand and supply has been recognised in various Queensland Health reports and policy documents. Health regulatory bodies have been criticised for being unduly rigid in allowing for flexibility and responsiveness of the workforce to the emerging needs of the community (Queensland Health, 2005c). According to the Queensland Health (2005d) report the scope of practice for individual professions has in part been bound by historical practice and professional interest. It advocates removing barriers to workforce mobility and creating more flexible career paths. The Queensland Health (2002) policy document has called for the

redefining of professional boundaries to allow the health workforce to reach its full potential. It suggests combining elements of the medical, nursing and allied health professional training under a common education program may achieve a more seamless model of care. A more generically qualified health worker would help to deal with the shortage of doctors in some rural communities. Taking on some of the more routine healthcare tasks and assisting with more complex ones would leave doctors more time to concentrate on tasks requiring higher skill levels. It could also reduce the frequency of patients needing to travel long distances to seek medical attention, advice or follow-up treatment for less severe medical illnesses and injuries. Certain types of health services could thus be provided in a more timely fashion and at a lower cost.

The implementation of any expanded care model must take into consideration a number of important points to ensure expediency and appropriate fit to already existing structures of healthcare provision. Spaite, Criss, Valenzuela & Meislin (1997) have pointed out that the emphasis of expanded care models should be on an expanded scope of service, not just an expanded scope of practice. It is important to identify when planning for expansion whether these new systems actually complement existing structures or fill new needs. Above all, expanded practice model development should be based on the needs of the community that it is designed to serve. To add value to existing infrastructure, programs should include services that are not already available, so that they are not simply a replication of existing services. These might include such things as public education, prevention and safety programs that accord with the needs of the community. The principle of economies of scale should also be considered. There is a need to consider whether it would be more practical for someone else to provide this service and whether someone else could do it better and cheaper.

A range of expanded scope of practice initiatives have been trialled overseas in response to the shortage of health professionals and escalating health costs experienced there. The NP model has been operating very successfully for many years in many countries. Here in Australia the NP is the only model that has been implemented on a large scale. First implemented almost a decade ago, it is currently being trialled in all Australian states and the program is at various stages of development in each state. An examination of the challenges faced in the development of this model here and overseas can provide insight useful for the development of other models of expanded practice.

1.9 The Nurse Practitioner model

The role of the Nurse Practitioner (NP) was developed and became firmly established in both the USA and Canada approximately 30 years ago. The NP role has been introduced in the United Kingdom, Australia and New Zealand only in the last 5–10 years (Commonwealth Department of Education, Science and Training, 2001). In Australia a NP is a Registered Nurse educated to function autonomously and collaboratively in an advanced and extended clinical role. NPs are Registered Nurses who have been authorised by the state or territory regulatory authority to use the title, which is protected by the state and territory legislation on nursing.

In Australia, where the NP movement is still young, new NP roles are dictated by the lack of clarity in describing the scope of practice (Gardner & Gardner, 2005). The NP scope of practice is determined by the context in which the NP is educated and authorised to practise, which is characterised by clinical assessment and therapeutic management of specified health and illness presentations. The range of service models in Australia in which NPs work is extensive and includes areas such as primary care, acute health care services and rural health services.

Nurses constitute the largest group of health professionals within rural and remote communities and people in these areas depend heavily on them for all areas of health care service (Gardner & Gardner, 2005). Improved access to health care has been identified as a major benefit of the establishment of the NP (Queensland Health, 2003b) and as such reports from other states in Australia indicate that the services provided by NPs have achieved improved access to health care, either by offering a new service or a more improved and timely service (ACT Health, 2002), and by enabling treatment to be started earlier.

At present there is considerable variation in the educational preparation and requirements of the NP between countries. The nursing council of New Zealand requires NPs to complete a clinically focused Master's degree and have a minimum of 4–5 years experience within the relevant scope of practice, in addition to completion of an approved pharmacology course for those NPs seeking prescribing rights. In the United States NPs are required to complete an accredited program and pass a certifying examination to be able to practise as a NP. Eighty-eight per cent of United States NPs graduate with a Master's degree.

Australia, however, has entered the scene with different priorities for the NP when compared with other countries. For example, recommendations for accreditation and education of NPs have been more comprehensive than in programmes developed elsewhere (Chiarella, 1998). In Australia to date, all states and territories have moved to requiring a Master's degree qualification, with some interim process to enable the immediate authorisation of NPs. The authorisation process ensures that the expert Registered Nurse applying as a NP has:

1. Undertaken appropriate postgraduate education or has an equivalent level of experience to support nurses' practice; and
2. Provided evidence of nurses' ability to consistently practise autonomously and at an advanced level within an extended role.

Queensland currently has legislation that allows the nursing regulatory authority to endorse Registered Nurses in designated areas of practice, including remote and some rural areas, to perform an expanded clinical role.

Distinctive to the NP model in the Australian context is the recognition of “a range of roles that revolve around a central core of expert clinical nursing judgement” (Hand, 2001, p19). These roles have allowed the development of NP models that aim to provide rural/remote services, acute care areas and also to provide care to many underserved groups such as sexual health issues. In rural and remote communities

Registered Nurses are generally the first point of contact for the people, often acting as a sole primary health care provider. The Registered Nurse is therefore required to extend their scope of practice due to a community demand and the lack of any other form of health personnel support, highlighting the importance of integrating the NP role of extended practice, to give authority and regulation to a role that already exists but until now was not recognised.

New South Wales, Victoria, South Australia and Western Australia have all amended relevant state legislation to protect the title of NP, and to allow for NPs to prescribe medications according to approved clinical practice guidelines (Queensland Health, 2003b). Luker et al. (1997) explain that authorising prescribing privileges for NPs enables clients to receive prescriptions in a timely and convenient manner. These prescribing privileges can eliminate the need for a separate visit to the Medical Practitioner and in turn avoid delays in patient discharge caused by patients having to wait for the Medical Practitioner to write a prescription.

The services of the NP are demonstrably effective in managing common acute illnesses and injuries and stable chronic conditions with an emphasis on health promotion and disease prevention (Gardner & Gardner, 2005). NPs fulfil an essential function within the Australian health care system because nurses working in these advanced nursing roles work autonomously and initiate the care process, as well as collaborate with other health care professionals. The NP role extends advanced nursing practice and is specifically sanctioned by legislation and professional regulation. According to Queensland Health (2005b) the NP role is grounded in the nursing profession values, knowledge, theories and practice and they provide innovative and flexible healthcare delivery that complements other healthcare providers. The role of the NP is complementary to other healthcare providers and as such they work in close collaboration with doctors, allied health professionals and other health care providers.

NPs are experts in their particular specialty field, actively participating in research, quality initiatives and policy development within that area. Extensive national and international research has demonstrated that the NP role is safe and effective and highly acceptable to the patient population (NSW Health Department, 1998). However, many experienced rural and remote nurses, particularly in under-serviced isolated areas, are currently practising at an advanced level within their everyday scope of practice, though are not identified as NPs. The National Association of Rural Health Education and Research Organisations (2001) recommends that such roles need to be more clearly defined, recognised and supported, through using clinical guidelines for example.

During the last 30 years, numerous studies have documented the safety of NPs as effective providers of primary care. These studies compared outcomes of patients who received NP care with outcomes of patients who received physician care. One of the best-designed studies, the Canadian Burlington Randomized Trial (Spitzer et al. 1974), was conducted in the early 1970s. NPs safely and effectively managed 67 per cent of their patient visits without physician consultation, with the remaining 33 per cent of the patients appropriately referred to physicians for management.

In summary, the role of the NP continues to evolve in response to changing societal and healthcare needs as consumers in all settings seek increasing services; NPs have an opportunity to claim a significant core of health care delivery. In clarifying their leadership role in primary health care, NPs combine the roles of provider, mentor, educator, researcher, and administrator. NPs employed in academic settings contribute to the missions of the university, as do other faculty. Consequently, NPs participate in the discovery of new knowledge (research), the application of knowledge (clinical practice), the integration of nursing concepts and concepts from related disciplines, and teaching. Members of the profession are responsible for advancing the role of the NP and ensuring that the standards of the profession are maintained. Outcomes research of their practice will allow NPs to influence public policy through participation in professional organisations and in health policy activities at the local, state, national and international levels.

1.10 Current expanded scope activities in the Queensland Ambulance Service

There is considerable evidence that Queensland paramedics in some rural and remote locations are taking part in extended scope activities. A survey of 18 paramedics working in rural and remote communities (Murdoch & Tippet, 2006), revealed that the nature of these activities varies between settings and has evolved according to community needs. While some of these activities may not be officially endorsed in clinical practice documentation by the Ambulance Service, they are carried out under appropriate supervision from local health providers, and paramedics receive training and instruction prior to undertaking them. Paramedics are providing an important service to people who would otherwise need to travel considerable distances to obtain routine care, advice and management of chronic and minor conditions. The range of extended scope activities that are currently being undertaken by Queensland paramedics includes:

- assisting at local council immunisation clinics under Medical Officer (MO) supervision
- prearranged home visits to rural properties to perform wellness checks and health clinics that include blood pressure checks, blood sugar level (BSL) monitoring, 12 lead Electrocardiographs (ECGs), and providing advice on issues such as men's health
- home visits to the elderly who live within the town limits for wellbeing checks, medication compliance and to ensure their expectations regarding their healthcare needs are being met
- dressings clinics in QAS station casualty rooms as an adjunct to outpatient services provided at the local hospitals
- providing care for the ongoing treatment of minor injuries and care of burns, using silver nitrate cream under local medical supervision
- suturing in hospital Accident & Emergency (A&Es) under MO supervision, suture removal in A&Es and ambulance stations under initial instruction and subsequent follow-up by a local MO
- venipuncture, Intravenous (IV) cannulation within hospitals at their request. IV cannulation is standard practice within the QAS, and Intensive Care Paramedics (ICPs) have been involved in training and assessing Registered Nurses in cannulations in the hospital setting

- assisting at hospital triage, assisting at the hospital nurses' station
- assisting with taking chest and extremity X-rays in hospital.

Many of these arrangements such as visits to rural properties are intentionally kept informal in nature to encourage those clients who may otherwise be reluctant to take advantage of these initiatives to take part. When health concerns are identified clients are encouraged to seek expert advice from an appropriately qualified health provider. These services are provided as an adjunct rather than in place of formal health services. One of the most important roles for paramedics working in rural settings is community engagement. This is important for gaining the trust and confidence of the people that they serve.

The shortage of health providers currently being experienced in Queensland provides an ideal opportunity to formalise and further develop expanded practice roles for ambulance paramedics. There is a range of possibilities to expand the practice of paramedics in rural and remote, regional and metropolitan settings. Some of the options that may be considered are presented in the following sections.

Chapter 2

Review of Expanded Practice Models

2.1 Introduction

The previous sections have shown there is a deficit in health care provision, especially in rural and remote Australia due to workforce shortages and maldistribution. Responding to this issue will warrant a raft of reforms. These will include the need to consider increasing the number of medical, nursing, and paramedic trainees and exploring the development of new generic health care providers. There is a need to be mindful of the potential for undesirable effects that this could have on existing health structures, such as the deskilling of health professionals. There is also a need to consider expanding the present roles of health care workers and a need to explore alternative models of delivering health care, with particular attention to rural and remote communities. The efficacy of expanded practice models has been demonstrated by the successful implementation so far of the NP model overseas and in most Australian states. There is further scope for increasing the capacity of the healthcare system by utilising untapped resources already available within the system. This section focuses on the capacity of paramedics to take on expanded practice roles, the potential for exploiting existing underutilised resources and possibilities for developing new models, guided by what has already been done overseas and applying these to the Australian context.

2.2 Current state of ambulance practice

In Australia and elsewhere the role of ambulance paramedics has generally been acknowledged as an important part of the overall patient care process. However, in the past they have not formally been recognised as part of the health care team. In recent years ambulance paramedics have engaged in dialogue to devise strategies that would make their role more relevant to the overall healthcare process. They have sought to advance paramedic practice, enhance their level of education, professionalism and status, and in the process gain greater recognition from other health care workers. A closer coordination of ambulance services with the rest of the health care system would enhance the patient care process and enable a more seamless provision of health care.

The advancement of paramedic practice has been promoted in several ways. Some observers have suggested that paramedics should pursue formally recognised university-based education and training (Field, Battersby & Hodge, 1999; Harries, 1998), have greater involvement in formulating evidence-based prehospital patient care practice (Lord, 1998), and endeavour to move toward more autonomous practice by developing their ability to critically review current practices, acquiring a specialist body of knowledge and creating their own code of ethics (Harries, 1998; Lord, 1998). Such changes have been viewed as necessary for paramedic services to continue to provide appropriate levels of pre-hospital health care and to remain relevant in the overall health care process (Bailey, 1997; McDonnell, 1999). The

Australian College of Ambulance Professionals (ACAP) is the representative association that promotes the professional development of emergency pre-hospital health care workers in Australia. In recent years they have been working toward the formation of a national standard for paramedic training and accreditation, and promoting greater paramedic involvement in pre-hospital research. The need to raise the profile of pre-hospital and Emergency Medical Service (EMS) research is well recognised as a means for driving evidence-based practice (Lord, 1998; Sayre, White, Brown & McHenry, 2005; Tippet, Clarke, Woods & FitzGerald, 2003).

Expanding the paramedic scope of practice is seen as an important progression for paramedic pre-hospital health care delivery (Bailey, 1997). Ambulance services throughout Australia have extended the range of care and treatment interventions used in the pre-hospital setting by employing a tiered structure of paramedic qualifications with new drugs and interventions introduced at the various levels. This activity is significantly improving the management of patients in the acute pre-hospital setting, achieving greater efficiency and better outcomes for patients (Woodall, McCarthy, Johnston, Tippet & Bonham, 2005). Broadening the range of patient care interventions has required paramedics to be able to differentiate between similar presenting conditions to determine the most appropriate care. Although patient care is still mandated by protocols, paramedics now have a greater scope for making decisions about the appropriateness of an intervention in a given context, and in this sense they operate with more autonomy. However, this has not changed the scope of what paramedics do. Both the parameters and the context of emergency pre-hospital care have remained essentially unchanged.

Paramedics are both motivated and capable of taking on expanded healthcare roles. The opportunity to advance the paramedic scope of practice to help address the deficits in health care needs, especially in rural and remote Australia, should be exploited. Remote communities provide an ideal setting in which to initiate expanded care roles given that healthcare shortages are most pronounced in these areas. Ambulance officers often take on an unrecognised role of first-line community health monitoring in some areas, and their advanced training can be underutilised (Cameron, 2005). The comparatively low unit hour utilisation (UHU) rates (Parker & Hubinger, 2003), in some regional and remote areas also provide an environment conducive to expanding the paramedic health care role.

As well as exploring expanded roles, new models of providing health care should also be considered. Two examples worth considering are the recently developed Emergency Care Practitioner (ECP) model from the UK and the Physician Assistant (PA) model that has operated successfully in the USA for more than thirty years and introduced recently in the UK. The ECP concept and, to a greater extent, the PA model go beyond the expanded practice programs for ambulance paramedics and are comprised of a much broader scope of practice. Recruitment into these programs has been sourced from various allied health care disciplines including paramedics, nurses and defence force medics.

Until recently little attention has been given to how the role of paramedics could be expanded, or how new roles could be developed to help fill the gaps in the health care service provision. In a recent article Duckett (2005a) argued persuasively that in order to meet emerging health care needs, future healthcare

workforce planning in Australia should not be based on providing more of the same, but should include planning expanded roles for existing workers and the creation of new models of providing healthcare. These new models could be designed to articulate multiple career pathways and share a common core of education and training. The health sector will need to undergo significant restructuring to implement these models (Duckett, 2005b). Changes like these are promoted through dialogue and the exploration of alternative health care models. However, little of this has occurred in Australia with any rigor.

2.3 Proposals for expanded paramedic practice

O'Meara, (2003) perceives the implementation of a pre-hospital practitioner model as a way for the pre-hospital system to use its excess capacity to fulfil broader public health and primary care outreach roles. This would enhance the “chain of survival” by increasing the depth of treatment, clinical decision-making, and range of pre-hospital practice. This model sees the whole population as its clients with pre-hospital care extending to public health activities to prevent accidents and promote health, as well as respond to emergencies, treat and transport, and facilitate recovery through involvement in rehabilitation and recovery programs. This model also draws on the multiple option decision point (MODP) model suggested by Neely et al. (1997) that extends the decision making ability of the paramedic practitioner to decide whether to transport to emergency department, negotiate alternative transport for the patient, refer the patient to their primary care giver or treat and leave the patient at home if appropriate. In order to prepare to take on a broader scope of practice like the paramedic practitioner role, paramedics will require more training in a higher degree and will need to acquire a much broader knowledge base.

Grantham's, (2002) *New Paradigm Paramedics* describes a model of pre-hospital service developing over the past five years in the South Australian Ambulance Service. In this model treatment protocols are being replaced by guidelines. These guidelines enable the paramedic to tailor their treatment more closely to the individual situation. Therefore this system resembles more closely a medical model of practice that is more holistic than the traditional protocol-driven paramedic practice. Treatment is founded on a greater depth of knowledge and not just on the acquisition of skills. The ability to think laterally and problem solve are key to this approach and the process of educating these practitioners must reflect these principles. Grantham acknowledges that the introduction of this model has been met with a certain degree of nervousness from the medical profession. Its success has been measured anecdotally through positive reports from receiving hospitals, the low level of complaints from users of the system and positive feedback from assessors of the system that include the Australian Quality Council. Its success is attributed to close clinical evaluation and continually evolving and ongoing education and model development.

Changes to paramedic practice described above in South Australia are also occurring in other states. In most state ambulance services there have been similar trends toward introducing less rigid protocols governing patient care practice. Particularly among the more highly educated and trained intensive care or equivalent level of paramedics, there has been a gradual transition from treatment based on protocols to practice- based clinical guidelines. However, so far in Australia the vision of expanding the scope of

paramedic practice and the development of new models of service delivery has not progressed far beyond scant dialogue.

The concept of developing new healthcare models is not unique to Australia but has been debated and trialled in several countries in recent years, including in the USA, Canada and on a much larger scale in the UK. Reviewing these dialogues provides insight into what has driven the discussion on expanded care programs and new models of healthcare overseas. This should be useful for providing new ideas on model development in the Australian context. Various expanded practice programs and new healthcare models have also been tried, although these have mostly been small-scale or relatively new developments. A review of these trials is useful for identifying the successes, limitations and challenges associated with these programs and models in various contexts.

2.4 Expanded practice healthcare roles in the USA, UK and Canada

The problems of healthcare worker shortages and escalating healthcare costs currently being experienced in Australia are largely a global issue that has been experienced in the USA (Delbridge et al., 1998), the UK (UK Dept of Health, 2001), and many other countries. The growth of expanded practice models overseas has not been confined to rural and remote areas. Expanded practice programs have been designed and tested in different contexts including in rural, remote, regional and a range of metropolitan settings. The various needs and available resources of the individual populations have influenced the development of these programs. It would be unrealistic to expect that an expanded program or healthcare model designed for one context would be suitable for another. Analysis of these models should, however, be useful for generating ideas about different options for health care provision in Australia.

A search for published literature relating to expanded care program evaluations in the USA, Canada and the UK was performed. Papers of this type proved difficult to find and suggests that very few quality evaluations have been conducted. This is not surprising given that most programs of this type are relatively new developments. The terms Community Paramedic and Paramedic Practitioner have been used somewhat interchangeably to describe expanded scope roles that have evolved from conventional paramedic practice, with recruitment coming almost exclusively from within the ambulance services. Emergency Care Practitioner (ECP) is a term associated with the UK model characterising a broader scope of practice than the former two terms. The Physician Assistant (PA) model has been a feature in USA healthcare for many years and constitutes a scope of practice confined only by the limits placed on the PA by the supervising physician.

2.5 USA Red River expanded practice trial

An experimental expanded practice trial conducted in the U.S. provides valuable insight into the importance of careful planning and monitoring of these types of programs. Hauswald, Raynovich & Brainard (2005) reported on an experimental community health program conducted in the isolated

town of Red River (38 miles and 60 minutes drive to the nearest hospital) in the state of New Mexico. A consortium from The New Mexico School of Medicine and The New Mexico Department of Health commissioned the project. The aim of the program was to provide an expanded scope of care to the local community beyond that already available from the local EMS, which for most times throughout the year was the only source of medical care in the community. A major part of the EMS project was the inclusion of chronic disease surveillance, community health education, and of injury and disease prevention programs. Protocols included the long-term care of alcoholism, hypertension, diabetes, and family planning.

Sixteen Emergency Medical Technicians (EMTs) from several ambulance services were initially selected for training in an expanded practice program. For various reasons not mentioned in the report, only three EMTs from one service completed training from the initial 16. Training consisted of 380 contact hours at the EMS academy followed by 600 hours of clinical practice mostly provided by local physicians and other health care providers.

The trial ran between October 1994 and December 1999. The program was initially viewed successful, receiving positive publicity and attracting the interest of other EMS providers. Five years later, only one extended EMS provider remained and the service requested permission to train a further five EMTs to provide full-time coverage. The commissioning body responded by performing a formal review. The trial was stopped due to a number of serious problems associated with the program that were reported in the review's findings. The following is a brief outline of the findings as reported by Hauswald et al. (2005).

A lack of external quality control due to poor standards in supervised practice that contributed to a host of other serious problems was seen as the main reason for the project's failure. The remoteness of the location was seen as a major contributing factor to the lack of adequate supervision on the project overall, and the practices being carried out. Although the training protocols were very broad, in actual practice skills beyond the routine paramedic practice were rarely used, representing a considerable protocol-to-needs mismatch. There was an apparent almost complete absence of continuing clinical reassessment, education, training and clinical quality review.

The lack of supervision led to violations of practice mandate, industry standards, state regulations and laws, apparently due to ignorance and circumstance. Examples of violations quoted by Hauswald et al. include:

- inadequate documentation, record keeping, and record security for services provided
- EMTs performing health check examinations that were clearly beyond the level of providers' licensure
- advanced practice procedures being performed by unqualified EMS personnel on behalf of qualified staff
- reports that extended care providers would seek prescription orders from other physicians if prescription requests were initially refused.

The relatively high turnover of trained providers created a situation where extended practice services were not available on a full-time basis as originally intended.

The failed Red River Community Health Program represents a poorly planned and implemented, and poorly supervised experiment that went wrong. However, it can serve as a valuable reference for other services that are considering expanded practice models. The need to ensure there are adequate safeguards is clearly illustrated by the failure of this project. A number of necessary generic protection measures are readily identified for future projects of this kind.

Foremost is the need to ensure that there is planned provision for carefully supervised clinical practice and quality control. In remote areas a local medical officer or MO from the nearest hospital might be best suited for this, especially in the initial stages of the project. Local control would also help foster closer working relationships between the paramedic and other health care workers by ensuring their involvement in the program. Local health care workers working in conjunction with local ambulance service providers should be in the best position to determine the needs of the local community and how best to monitor practices. Determining the type of training and skills required beyond the basic level of expanded scope training for the paramedic extended care provider would also be best negotiated at a local level. Formal reporting procedures to an appropriate authority e.g. the ambulance medical director would ensure compliance to standards and uniformity in the execution of practices. Most importantly, there needs to be ongoing evaluations of whether the needs of the local community are being adequately met by the program, whether this is cost-effective and how practices can be improved.

An Internet search was conducted for other expanded scope trials in the USA. The available evidence suggests many small-scale initiatives have been or currently are being trialled in various locations, but no practical evaluations appear to have been conducted. One example of such initiatives reported by Anderson (2005) on the USA Rural Health Resource Centre website is the community EMS project in Alaska. EMTs receive additional training to provide expanded scope and non-acute care, mainly in remote industry sites. Their scope of practice includes administering limited additional medications, basic health checks such as hearing tests, enhanced examination skills and suturing of minor injuries.

2.6 Expanded scope programs in Canada

A community paramedic scheme launched late in 2002 to service two remote island communities of Long and Brier in Nova Scotia, Canada was reported on by Misner (2003). The total population of both islands is around 1240 permanent residents, and transport to the hospital from the farthest island is approximately 50 minutes, requiring two ferries to reach the general hospital in Digby. A three-year multi-phased initiative was launched by the islands' residents in conjunction with the Emergency Health Services Nova Scotia (EHS). The first phase provided 24/7 emergency paramedic coverage on the islands. The second phase consisted of paramedics providing blood pressure checks, diabetic checks and other non-urgent services such as administering flu shots for the islands' residents. In the third phase, a NP was

deployed to the islands, and paramedics became involved in more complex activities such as wound care, community falls prevention programs for seniors, phlebotomy (blood drawing) services and a medication compliance scheme. Paramedics were later also trained in urinalysis assessment, suture/staple removal and other skills. Policies, procedures and protocols necessary for the safe delivery of these expanded practice skills were developed and supervised by the EHS. The Misner (2003) report did not specify the length or scope of the training provided. A list of the Columbia Community Paramedic competencies is provided in Appendix A.

A community health assessment was conducted to ensure that services provided were based on community needs. Information derived from a community survey was used to plan various health promotion programs. Community paramedic services are accessed through direct contact by phone, requests from a family physician or by referrals from the NP. A recent addition to the services being offered is the adopt-a-patient program, designed to provide consistency and continuity of care for patients. Paramedics sign up to care for patients requiring frequent visits for such things as wound care or congestive heart failure assessment. The paramedic is then responsible for scheduling regular visits and ensuring that the patient's medical needs are met.

The success of this program has been measured by the reduction in the average number of visits to the hospital emergency department of 23 per cent since shortly after the program began. The new service has generated approximately 250–300 community-based patient contacts per month. This scheme was somewhat unique in that the islands' community largely initiated it. The community paramedics worked in collaboration with a NP and an offsite Physician. Other methods of evaluating the effectiveness of the scheme such as patient satisfaction were not reported.

Recently in Trail, British Columbia, a critical care transport (CCT) pilot project was initiated by a joint task force of the British Columbia Ambulance Service (BCAS) and the Interior Health (IH) Authority. The function of the CCT is to provide rapid deployment of highly skilled emergency care clinicians to provide pre-hospital advanced life support to critically ill or injured patients. The CCT team is usually deployed using a non-ambulance vehicle able to carry them and their equipment to the scene, but without patient transport capacity. Patients are treated in the field and then transported using the most appropriate mode of transport for that case available at the time, including a support ambulance vehicle or helicopter. Other functions of the CCT team are to provide inter-facility critical care transport, Airevac support, in-hospital critical care and outreach training.

Each CCT team consists of an advanced life support paramedic and a Registered Nurse from the service area hospital emergency department. The skills of each member complement the other, enhancing the scope of service that they are able to provide. Initial and ongoing cross-training is designed to enhance the skills and abilities of each team member. While on deployment CCT teams are able to communicate with the local hospital for treatment and intervention advice from a Physician. Medical oversight is jointly provided by IH and BCAS. IH assumes responsibility for this when the CCT team is performing in-hospital tasks and procedures and the BCAS is responsible for out-of-hospital tasks and procedures. When not

deployed both team members work in different areas of the local hospital providing critical care and other functions that help develop their skills and experience. The team are supernumerary to the hospital system to allow immediate deployment when required.

The CCT model was instigated in response to a recognised shortfall of existing out-of-hospital intensive emergency care provision, and through the cooperation of the IH and the BCAS. The joint task force was created and a Functional Area Modelling (FAM) exercise was conducted to enable each agency to gain a better understanding of the business conducted by the other, with a goal of advancing enhanced partnerships, and the development of mutually beneficial goals. Key stakeholders representing each organisation contributed to the nine workshops conducted over several months (Williamson, 2004). These included the regional medical coordinator, hospital physicians and nurses, public health representatives, the BCAS director, paramedics and other relevant representatives from both agencies. The FAM assignment included examination of all patient care delivery related functions within the boundary of the IH and BCAS that related to the interaction of these agencies. The functional area model document created by the joint task force identified several operational issues that needed to be worked through to enable the CCT operation to work effectively and efficiently. The joint task force is continuing to work through some of these issues as the CCT program continues to be developed.

The successful development of the CCT service demonstrated that issues of regulation and management could be worked through enabling a cooperative alliance between organisations to achieve solutions to community needs. The implementation of this model has thus far achieved better utilisation of healthcare resources and better outcomes for patients by significantly reducing the time taken to give initial treatment, reduced transport time and faster delivery to definitive care facilities.

2.7 Summary of USA and Canada expanded practice models

Paramedic expanded scope programs are relatively new and have been trialled in an adhoc fashion in the USA and Canada. Very few evaluations with regard to their efficacy have been published in peer-reviewed journals. A few well-planned and carefully regulated schemes have been demonstrated to be working well. These were initiated in response to a recognised unmet need and have evolved according to the needs of the local community. Most of these schemes have been relatively basic and innocuous in their scope of practice. They have required only minimal training to enable EMTs to carry out their functions. They have nevertheless shown to be useful for their purpose.

A database search of peer-reviewed journals failed to find any other reviews or evaluations of expanded EMS practice in the USA since Hauswald et al.'s report on the failed Red River trial. However, debate regarding possibilities for future expanded practice development has taken place to a modest degree. Some of this discourse is now briefly reviewed.

2.8 Expanded paramedic practice discourse in the USA

The National Highway Traffic Safety Administrator EMS Agenda for the Future (NHTSA, 1996) sets out a vision for the future of EMS in the USA and has been described as the most influential reform document in the USA. The document describes the current state of EMS in terms of attributes such as integration with other health services, research, legislation and regulation, and other factors (where we are). It then charts a vision of what each of these should look like in the future (where we want to be), and suggests how these changes might be achieved (how we get there). This basic planning format has since been widely used by various pre-hospital provision agencies in the USA for planning their change agenda. Several key factors are recognised in need of reform in the NHTSA document. These include a closer integration of pre-hospital services with mainstream healthcare, an expanded practice EMS system incorporating lifelong learning, and undertaking quality pre-hospital research to ensure EMS evolves with a scientific basis (Delbridge et. al. 1998).

Many of these themes have been commonly repeated in pre-hospital healthcare literature. Hicks and Bopp (1996) describe an integrated pathway or systems approach to health care delivery, especially for rural and remote communities. This approach has its focus on the coordination of services along a comprehensive continuum of care with the needs of the patient as its prime concern. They emphasise the need to develop health care systems according to the needs of the community that they serve and this principle should influence the development of future emergency medical systems. These sentiments have been echoed by others e.g. O'Connor et al. (1999).

A framework for the evaluation of expanded scope of EMS practice has been suggested by Spaite et al. (1997). They have argued that the assessment of any new healthcare intervention or practice must take into consideration the impact on existing facets of the operation. This is equally applicable to the introduction of new models of healthcare. They refer to this as a type A system. For example, the effectiveness of a rural expanded scope program incorporating an immunisation program, health checks, or long-term care of chronic conditions can be easily measured through improvements in community health. However, if, in that same community, the number of sudden cardiac deaths increased dramatically e.g. because of delayed responses, then the full impact of the new intervention would not be realised unless cardiac outcomes were being measured concurrently. In contrast, in a type B system the new practices would be measured in isolation of other, core business operations with possible detrimental effects on community health. Expanded scope programs must be implemented with built-in evaluation systems.

2.9 Non-essential transports

There is recognition that hospital A&E departments are overutilised by non-urgent cases and that many patients are transported gratuitously to hospital A&E departments by emergency medical services (National Association of EMS Physicians/American College of Emergency Physicians Joint Position Paper,

2001). In response many studies have evaluated the ability of paramedics to determine patients' clinical need for transportation to hospital. Typically, these studies have required paramedics to determine whether patients needed transport to an emergency department, or whether they could be safely transported to an alternative destination or caregiver, or not transported at all following treatment. The ability of paramedics to do this reliably is seen as pivotal to developing alternatives to transporting all patients to hospital A&Es (Neely et al., 1997).

Various studies examining paramedics' ability to accurately triage patients in the field have used triage protocols (Schmidt et al., 2000), exclusion criteria ruling out alternatives to hospital transport (Dunne, Compton, Welsh, Zalenski & Bock, 2003), or no protocols to guide EMTs' pre-hospital triage (Silvestri et al., 2002; Hauswald, 2002; Dunne et al., 2003). Most were simulation studies that required paramedics to make a determination based on actual patient assessment during transport or used clinical information on patient records, while treatment and transport protocols remained unchanged. EMT decisions were then evaluated against judgments by hospital emergency physicians, or by comparison with subsequent patient diagnoses and outcomes. These studies found that paramedics tend to under-triage a small percentage of cases, usually with occult conditions, representing an unacceptable risk to patients' safety. This occurred whether or not triage protocols or exclusion criteria were in place and suggests that EMTs are not adequately trained to make these judgments. EMTs were found to be much better at triaging patients presenting with acute conditions than those with more vague or chronic complaints.

The use of treat and release protocols to determine suitability of leaving patients with specific medical conditions at home following treatment have also been explored. These have included protocols for hypoglycaemia and epilepsy. Most studies found that it was safe to leave the majority of patients at home following a hypoglycaemic episode or epileptic seizure using these protocols. However, there remained a substantial risk for a minority of patients that sometimes led to adverse outcomes (Roberts & Smith, 2003; Snooks, Dale, Hartley-Sharp & Halter 2004).

Most of these studies were conducted in the USA where there is considerable variation in EMT training and it is therefore unclear to what extent different levels of EMT training would influence their ability to triage effectively. Silvestri et al. (2002) have argued that it may be unrealistic to expect any pre-hospital health provider to make these decisions reliably without the diagnostic adjuncts available in most hospital A&E departments. This point has been echoed by Rea and Plorde (2003) who have called for further research in this area to identify selected patients who would be good candidates for alternative triage. Pointer et al. (2001) have suggested that further refinement of triage protocols and more stringent exclusion criteria might enable more reliable triage decisions by EMTs. However as non-transport protocols are made more stringent, the number of non-transports diminishes to insignificant numbers. Cone, Benson, Schmidt & Mann (2004) have questioned the validity of criteria used to measure triage ability. Recently two studies, Schaefer et al. (2002) and Snooks et al. (2004) demonstrated that paramedics were able to determine when patients with low acuity diagnoses could be safely transported to alternative clinic-based destinations. Hauswald (2003) and Silvestri (2003) have questioned the need to develop alternative models of pre-hospital care provision in which selected patients are diverted to destinations other than

hospital emergency departments. They have argued that the cost of training and required change in infrastructure outweighs the potential benefits to be gained by diverting a relatively small proportion of patients, who are best served by being seen in hospital.

In summary, these studies suggest that paramedics with their current level of training are generally not well positioned to treat patients with chronic or occult conditions and make determinations about whether transport to a hospital A&E is required. To take up expanded practice roles in which these decisions can be made safely they must first acquire further education and a greater depth of knowledge in areas such as chronic disease processes and ongoing care, and have greater diagnostic and clinical assessment skills. Development of new models of healthcare delivery that involve expanding paramedic practice must ensure that adequate training is provided to ensure the safety of patients.

In the UK significant healthcare reform has taken place in recent years. Like in Australia, the main drivers of this reform have been a combination of increasing health care demand, increasing healthcare costs and a shortage of healthcare providers (UK Dept of Health 2001). Obviously population distributions are quite different as are the logistics of providing equity in healthcare to the population. Nevertheless their purpose for developing expanded care programs is similar to ours, to find cost-effective ways of expanding the health workforce and to improve the delivery of pre-hospital care.

Health care reform and the development of expanded roles and new models have been supported in several UK health policy documents. The Department of Health document *Reforming Emergency Care* (UK Dept of Health, 2001) identified limitations in existing healthcare provision in the UK. It highlighted the need to transform the way emergency care services are delivered by reorganising and de-fragmenting healthcare structures and expanding healthcare roles. The National Health Service (NHS) Modernisation Agency was created to facilitate large-scale healthcare reform. At about the same time the need for ambulance services to expand the roles of paramedic ambulance service personnel was being debated (Joint Royal Colleges Ambulance Liaison Committee, 2000; Hassan & Barrett, 2002). The Joint Royal Colleges Ambulance Liaison Committee (JRCALC) document titled *The Future Role and Education of Paramedic Ambulance Service Personnel* (2000) recommended the development of the Emergency Care Practitioner role (ECP) in the UK.

While various prehospital expanded care programs were being developed and piloted by individual ambulance trusts, the Emergency Care Practitioner program was led by the Changing Workforce Program (CWP), part of the NHS Modernisation Agency. Program development began with the emergency care pilot based in the Coventry and Warwickshire Health Community (UK Department of Health, 2004). The Modernisation Agency Emergency Care Practitioner (ECP) *Report Right Skill, Right Time, Right Place* (UK Department of Health, 2004) highlights the introduction, development, and future plans for the ECP program in the UK. A subsequent publication by the UK Department of Health titled *Taking Healthcare to the Patient* (2005) referred to in recent literature as 'The Bradley Report' in reference to the National Ambulance Advisor summarises the achievements in ambulance service reforms over recent years. It also sets out a vision for further reform over the next five years.

The development of pre-hospital expanded health care roles and new health provision models has progressed in conjunction with new clinically supported dispatch prioritisation systems and clinical advice call centres (Robertson–Steel, 2004). NHS Direct and Care Direct were introduced as an alternative to the GP or ‘999’ (emergency ambulance number) calls. These services operate 24 hours a day and were designed to provide advice and appropriate referral for people with non-emergency health concerns. The UK Department of Health (2005) supports the concept of more highly trained clinical professionals providing telephone advice with appropriate decision support. Highly trained emergency care qualified nurses usually provide advice from these centres. Calls deemed to have the potential to be an emergency are directed to ambulance communications for the appropriate response. These telephone advice services have been shown to provide a high level of customer satisfaction. However, some have expressed concern that they may be producing additional demand rather rationalising the pre-existing workload (Ball, 2005). There is also concern about the level of clinical training of ambulance communications call handling staff (UK Department of Health, 2005). Ambulance communications rooms are increasingly being staffed by highly clinically trained paramedics using triage decision support software.

2.10 UK expanded practice models

Recently there has been a growing recognition in the U.K. that paramedic training must move away from the basic acquisition of clinical skills, no matter how wide ranging, to develop autonomous practice based on a broad clinical knowledge base (Ball, 2004). Widespread recognition and acceptance of the need for university-based vocational learning to replace skills-based training has recently been demonstrated (Cooper, 2005). The first stage in deciding the appropriate format for training entailed determining the competencies required for this new role to ensure it would meet with patient needs (UK Department of Health, 2004).

The nature of expanded care programs that have been developed in the UK in recent years is mixed. The models have varied in terms of the settings in which they operate, their arrangement and relationship with other health care providers, the type of work and case mixes that they deal with, their scope of practice and the length of training and education programs. Variations exist even within each service model, e.g. within the Emergency Care Practitioner (ECP) model there are differences in the length and type of training, the professional backgrounds of recruits, and the way they are deployed (Adams, Wright & Cook, 2005). The ECP model is being trialled in several locations throughout the U.K. although in some locations they are still in the early stages of development. There have been few quality evaluation studies on the ECP model. However, two of these studies are reported in the following sections.

A handful of recently published studies have reported on the initiatives of individual ambulance trusts to develop and pilot various expanded care programs. The frameworks in which they operate may be different to that envisaged in the Australian context, but it was considered appropriate to review these in detail to gain a sense of the issues and challenges that have been encountered in the development

of such programs. These studies are reported here in more or less chronological order of publication to provide a narrative of how expanded care models have evolved in the UK in recent years.

In 2002 the Birchwood Medical Centre in Norfolk launched the Appropriate Care At Point Of Need (ACAPON) system (Everden, Eardley, Lorgelly & Howe, 2003). Also in 2002, the South Yorkshire Ambulance Service, in collaboration with the emergency department of the Northern General Hospital and Sheffield City Council's Social Services developed and tested a community paramedic practitioner scheme (Mason, Wardrope & Perrin, 2003). This has since been replaced by a broader scope ECP program. The East Anglian Ambulance Service (Doy & Turner, 2004), and the Westcountry Ambulance Service (Cooper et al. 2004) are both currently developing ECP programs. An ECP pilot study comprising five NHS trusts was conducted in Warwickshire between May 2002 and August 2003 and an evaluation of this project was subsequently conducted (Adams et al., 2005). There are currently 17 trial sites for the ECP program nationally in the UK (Perrin, 2005). The ECP scheme run by the SYAS in Sheffield was shown to be among the most developed and active in the UK (Mason, O'Keeffe, Coleman, Edin & Nicholl, 2005; Smith, 2005). A two-part national evaluation study of ECP development examining factors such as training, scheme acceptance, clinical and cost effectiveness was conducted by Mason, Coleman, Ratcliffe, Turner & Nicholl (2004) and Mason et al. (2005). The London Ambulance Service began its ECT scheme as part of the national pilot in 2003 and now has ECPs operating in five Primary Care Trust (PCT) sites. Halter and Marlow (2005) recently reported on the progression of this scheme.

Other expanded practice models envisaged for the future include the Community Paramedic, based in GP surgeries; Critical Care Paramedic, based for example in neo-natal units; Paramedic Immediate Care Support Practitioner, managing various aspects of service delivery; A&E Paramedic, working alongside nursing staff; and Treat and Transfer Paramedic, based in walk in centres (Ball, 2004). Many of these programs are in the early stages of development and details of training, scope of practice and deployment context are yet to be determined.

2.10.1 Birchwood medical practice ACAPON model

Everden et al. (2003) have reported on the Appropriate Care at the Point of Need (ACAPON) system that was launched in a small community in April 2002. The Birchwood Medical Centre in the market town of North Walsham in Norfolk introduced a community paramedic (on loan from the East Anglian Ambulance Service) to its health care team comprising a GP, a practice nurse and a health care assistant to form a unified multidisciplinary healthcare team. The aim of the project was to provide more appropriate immediate and emergency care within the community through improved access and assessment.

Patient calls to the centre are taken by the receptionist who then sends a message to the ACAPON lead, a GP in the practice on rotation. The patient is transferred for immediate assessment to the appropriate member of the ACAPON team or given an appointment according to the nature of the case. Patients are assessed at the centre or, if more appropriate, seen in their home. All patients are discussed with the

relevant members of the team and no one works in isolation. In cases where transport to hospital is deemed appropriate, specific referral is made to admit. The team aims to provide rapid delivery of care in the most appropriate environment by the most appropriately qualified clinician or carer.

The paramedics' skills have been developed to include more routine assessment and care of patients. The paramedics have been trained to provide treatments, help with clinics, make home visits and liaise with the doctors once the patient has been assessed. The doctor has the responsibility for decisions about the patients' care. The paramedic continues to respond to emergency calls from ambulance communications, controlled through ACAPON GP triage. Once the paramedic has seen the patient, the GP is contacted to discuss the next step, resulting in immediate referral to hospital, patient attendance at the surgery or GP home visit. There were no details regarding the type or the length of training provided, or who the training provider was in Everden et al.'s report.

In the first 33 weeks of the program, 125 category A emergency calls from ambulance communications or via the practice have been dealt with by the ACAPON system, of which just under half remained appropriately within the community instead of being transferred to hospital. Of 63 back-up ambulances dispatched by ambulance communications, about one third were stood down and many others downgraded to a less urgent response by the ACAPON team. Only 11 of 305 cases perceived by the patient as an immediate need and subsequently seen by the ACAPON paramedic needed hospital admission, and a further 5 required A&E minor injury assessment due to lack of diagnostics.

The GP lead partner, Dr Paul Everden, asserts that the ACAPON system has made the healthcare process within that community more efficient, and by freeing up time has enabled them to provide a better standard of healthcare (Everden et al., 2003). Yearly savings in health care costs for the community were estimated at almost £30 000.

2.10.2 The South Yorkshire Community Paramedic Practitioner

In 2002 a community paramedic practitioner program (PP) was developed and piloted through the collaboration of the South Yorkshire Ambulance Service (SYAS), the emergency department and department of care for the elderly of the Northern General Hospital, and the Community Social Services team (Mason et al., 2003). The aim of the program was to provide a service for treating the elderly suffering from relatively minor, non category one (emergency) conditions in their own homes. The idea is based on the premise that on many occasions elderly patients who fall or are suffering relatively minor medical conditions would best be served by being treated at home or being transferred or referred directly to an appropriate aged care facility.

Paramedic Practitioners were trained in the assessment and treatment of minor conditions at an emergency NP level by completing a course developed in conjunction with Sheffield Hallam University. The skills that they acquired through training included: assessment, treatment and care of minor injuries including minor wounds, infections, soft tissue injuries and head injuries; radiological interpretation and

indications for radiography; assessment of mental function; assessment of the older patient with a fall; and social needs assessment. A list of PP skills as reported by Mason et al. (2003) is provided in Appendix B.

The broad-based training program consisted of 3 weeks full-time theory-based learning, followed by 45 days of supervised practice based in each of a hospital emergency department, minor injury unit and falls clinic. They also gained practical clinical experience in community services such as physiotherapy, occupational therapy and social services unit. The course was designed to build upon existing paramedic skills and was worth 60 credit points at degree level.

Service delivery was activated by a '999' call and PPs were deployed to appropriate cases, determined by the Ambulance Medical Priority Dispatch System (AMPDS) code. Specially adapted vehicles equipped with everything needed to deal with the acute conditions met by PPs were used. Clinical support was available from senior emergency department medical staff at the local hospital via telephone.

Since its implementation the South Yorkshire Ambulance Service has claimed the scheme has been an outstanding success. According to their website (Accessed 13/12/05) the number of elderly patients (those aged over 60 years old) who have been transported to hospital emergency centres has been significantly reduced and the PP has provided a high standard of care. However, it has not been possible to formally assess the success of this initiative since no known objective evaluation study of this program has been published. The functions of the PP in the SYAS have since been expanded and the scheme has evolved into the Emergency Care Practitioner model.

2.10.3 The East Anglian Ambulance Service Community Paramedics and ECP

The East Anglian Ambulance Service first deployed community paramedics in 2000 as a method of improving rural town response times (UK Department of Health, 2005). They were integrated into GP surgeries and community hospitals, and also supported GPs in undertaking in and out-of-hours home visits. They undertook diagnostic testing within surgeries and many were involved with running clinics for conditions such as asthma or diabetes. Community paramedics have also been implemented in other busy and deprived urban areas and have been linked with nursing, social and mental health teams to offer emergency '999' callers alternative pathways. The UK Department of Health (2005) reports that over 40 per cent of '999' cases attended by community paramedics receive care locally rather than being transported to A&E departments. Since the implementation of the Norfolk based community paramedic scheme A&E attendances were reduced by 32 per cent and emergency admissions were reduced by 26.6 per cent.

The background and development of the ECP model run by the East Anglian Ambulance NHS Trust was reported by Doy and Turner (2004). Program development was the joint initiative between the East Anglian Ambulance NHS trust and the Health Schools of the University of East Anglia. The role of the ECP in this

context was seen as occupying the space between the general practitioner, the nurse and the paramedic. The first pilot cohort consisted of 10 paramedics, although it was intended that recruitment from other groups such as nurses would be possible for future cohorts. Development of the role was complicated due to the fact that it was poorly defined and therefore there was a lack of understanding of roles and competency frameworks between professional groups. Support for clinical placements and course development was sought through networks by the project manager and curriculum leads.

Training for ECPs was designed as an 18-week course comprising a balance of academic and practical placement learning. As the first group going through the program, constituents had a great deal of influence on course development, which was moulded to suit the needs of the group. Program curriculum included patient examination and assessment, minor illness presentations, principles of chronic disease management and skills such as suturing and catheterisation. Non-clinical elements included health promotion, epidemiology, change management and study skills. Shifting from the traditional skills acquisition paradigm to an educational one where principles are learnt and developed presented a challenge for both ECPs and lecturers. However, this was seen as essential as it underpins a shift to practitioner status, with ECPs being able to apply principles and concepts across different situations. This is considered pivotal to the ECP model. The principles of knowledge development through research, evidence-based practice and reflective practice were heavily emphasised throughout training.

Several other challenges were faced throughout program development. Securing appropriate clinical placements with learning orientated mentors for all students was difficult. Students were at times met with some resistance and protectionist attitudes by the wider health care community who at times remained guarded in relation to role boundaries. National constraints in regard to prescribing ability and limitations in referral pathways were seen as hindering the ability of ECPs to perform their intended role to its full potential.

2.10.4 Westcounty Ambulance Service ECP program

Cooper et al. (2004) compared the emerging role of emergency care practitioners working within the Westcounty Ambulance Service with conventional paramedic practice. Their aim was to compare ECP and paramedic scope of practice and how the difference might impact on the patient's emergency care experience. Four ECPs who graduated from the University of Plymouth Bachelor of Science in Emergency Care were appointed to the practitioner role in September 2002. Two were based in an urban population in Devon and two in the rural population of East Cornwall. All four ECPs were based in a local minor injury unit (MIU) for half of their working week and their ambulance station for the remainder. Data collection was based on the four practitioners' reflective reports, MIU documentation and patient report forms. The analysis included both qualitative and quantitative data collected over a six-month period from October 2002 to March 2003.

There were four key themes that emerged from the data: resource deployment, training and education,

interagency cooperation and collaboration, and patient care. ECPs were more likely to be able to treat patients on scene without the need for subsequent transfer to hospital or other medical care unit. Paramedics conveyed 64 per cent of all patients while ECPs arranged conveyance for only 50 per cent of the patients they attended. This is despite the fact that ECPs saw significantly more trauma cases and fewer 'other medical' cases than paramedics. There were fewer transports by paramedic crews as well because ECPs were often able to attend non-urgent cases at the request of paramedics on scene and deal with the case without the need for transport. ECPs were also often able to cancel or downgrade paramedic response when they were first on scene.

ECPs and stakeholders agreed that the additional graduate level training they received had improved their clinical practice. They also reported that the experience gained from working in MIUs had significantly improved their skills. Benefits gained included improvement in wound care, advanced examination techniques, suturing skills and radiological interpretation.

ECPs were able to forge links with allied health professionals and develop patient referral processes with GPs and others to form direct admission policies to community hospitals and care facilities. There were tensions in some UK regions over training of practitioners and placement of paramedics in some traditional nursing and general practice roles.

There were no serious errors in patient care reported. The main reported benefits in terms of patient care were the ability of practitioners to refer patients directly and the ability to treat and release patients without transport.

While this study has highlighted some of the potential benefits of the ECP model it falls short of providing a comprehensive evaluation. The quality of care provided to patients who were treated at the scene without subsequent transport was not assessed or compared with that routinely received at hospital. The program was not evaluated in terms of cost effectiveness, taking training and other costs of implementation into consideration. On a cost basis it did not demonstrate an advantage over conventional treat and convey methods.

2.10.5 Warwickshire ECP pilot study

Adams et al. (2005) evaluated the ECP pilot study conducted by a cooperation of five NHS trusts between May 2002 and August 2003. These comprised the Warwickshire Ambulance Services NHS Trust, the West Midlands South Workforce Development Confederation, North Warwickshire PCT and the universities of Coventry and Warwick. The study involved cross-training paramedics and nurses with an emergency (A&E) care background and educating the recruited practitioners to degree level. Its purpose was to develop and field-test the ECP role in diverse clinical settings including pre-hospital care, A&E departments, walk-in centres, minor injury units and general practice. During the actual trial, however, ECPs were not deployed to work in primary care as envisaged due to a lack of support in this setting. There were some problems encountered with project management that may have detracted from project outcomes.

Six students comprising three paramedics and three nurses, all with substantial experience and considered high calibre within their fields, were recruited to the study. Students undertook a 2-year training program containing both joint and profession-specific elements which earned them a Diploma in Autonomous Practice and a Bachelor of Science Emergency Care. This included rotational placements in pre-hospital and A&E settings, and a 4-week intensive clinical assessment skills training. The experience gained by this first cohort of students was then used to design a new 15-week course to be used for training subsequent ECP groups for a national rollout. The vision for ECP formal scope of practice in the Warwickshire ECP pilot is listed in Appendix C.

ECPs were used to attend category B and C calls independently and category A calls with ambulance back-up. The absence of a job description for the ECP role overall meant that this would need to evolve as the program progressed, and would be informed by the process and outcomes of the study.

The study sought to evaluate several role performance criteria including:

- patient processing time
- the destination of '999' calls
- patient assessment and treatment skills
- acceptance of the role by other healthcare workers
- ECPs' ability to develop the role, form links and practise autonomously
- utilisation of the new role.

ECPs were found to spend significantly more time with patients compared with ambulance crews because they spent more time giving advice and attending to a wider range of patients' care needs. However, ECPs usually worked as single responders. The number of patients left at home was only marginally fewer compared with normal ambulance crews although of those who were transported, some were transferred to destinations other than A&E departments.

ECPs placed more emphasis on patient assessment, eliciting more information relevant to the clinical condition, and demonstrated a greater ability to justify intended interventions based on their assessments. They requested additional training in this area and made assessment skills a core part of future training curriculum. A lack of proper clinical governance including guidelines and protocols was blamed for ECPs' inability to fulfil their full scope of practice. They were also not able to develop and test their role to full capacity due to a lack of resources, equipment and a dedicated vehicle. They often lacked basic equipment such as 12 lead ECGs, wound closure equipment and provision for pain relief (Adams et al. 2005).

ECP ability to make direct patient referrals was adhoc and depended on the hospital and individual health professional they dealt with. No formal referral pathways were established before the pilot and the ECPs were unable to negotiate any. ECPs were dispatched much less often than had been anticipated and remained underutilised for the term of the pilot. A combination of insecurity, resistance to change and

lack of understanding about ECP capabilities and roles by ambulance communications operators was identified as the main cause of ECP under use.

The Adams et al. (2005) report makes several key recommendations for future pilot studies. The steering group should be better represented by key stakeholders such as GPs and allied health professionals to facilitate clinical placements, referral and collaborative working. There should be a more concentrated program of change across all clinical placement areas to increase the awareness and potential of the ECP role. This should help to promote the role, gain acceptance from the wider health community, and encourage greater utilisation of the resource. A dedicated project management team should be formed to arrange clinical governance, infrastructure and support. Detailed forward planning and sufficient lead-in time are necessary to enable formulation of practice guidelines or protocols, clear clinical governance arrangements and patient group directives for prescribing. Emphasis needs to be placed on clinical assessment skills training in education and training programs. Sophisticated methods of assessing service impacts of ECP schemes developed through different service models need to be created.

2.10.6 ECP national evaluation

The Emergency Care Practitioner Scheme is currently operating across 17 trial sites in the UK with approximately 600 ECPs in practice (Halter & Marlow, 2005). Due to the paucity of published evidence it is difficult to gauge the impact of the new role on health services. The Changing Workforce Program (CWP), part of the NHS Modernisation Agency and Department of Health, set up these programs in collaboration with various ambulance trusts. The programs at each of these sites are at various stages of development and they also vary in terms of the scope of practice, length and type of training and operational setting. These variations are mostly explained by the need to adapt the model to the different needs of each community (Mason et al. 2004). The role is being developed with a patient-focused care principle, mindful of the fact that it is intended to fill an unmet need without creating new demand (Perrin, 2005).

The NHS is taking a national approach to creating the ECP model. The role is intended to be generic, developed in accordance with national standards, but with some variations between sites in response to local needs. The aim is to attain a standardised level of training for achieving a core set of competencies to nationally recognised standards, making the role transferable across sites. The degree to which this was being achieved is questionable, however, due to wide variation in training and practice (Mason et al. 2004). Local influences on these variations include remoteness, distance to other services, and the configuration of other NHS services. Examples of where extension of practice has been implemented to meet local requirements included ECPs working in areas with a high incidence of chronic obstructive airways disease (COAD) and mental health needs.

The ECP role was developed with the intention of providing assessment and treatment of minor illness and injury within the community without necessarily transporting the patient to hospital. ECPs need to be able to take a detailed patient history, perform physical examinations, manage minor injuries and illness, and

order further investigations such as X-rays. They also have the ability to refer patients to other health care professionals and services and administer medication within set guidelines. The national ECP scheme has been developed cognizant of the literature findings reported earlier that suggest some caution is necessary with routine paramedic triage to self-care. Education packages are matched to the case mix and clinical guidelines are developed to ensure patient safety (Halter & Marlow, 2005). A list of the core skills taught by various UK ECP training courses is provided in Appendix D.

Most ECPs are recruited from the ambulance services' paramedics and EMTs, although the role is open to suitable candidates from other backgrounds such as nursing, occupational therapists and physiotherapists, or in some cases by direct entry. Currently in the UK approximately 90 per cent of ECPs are paramedics. Training courses at all sites are comprised of theory and clinical practice components and most sites are allied to a higher education facility. The length of these courses varies from 12–27 weeks for the theory component, and 8–24 weeks for the practical component in most areas, supervised practice being a major component in all programs. Most of the core skills build on those already taught to ambulance paramedics, but also include new ones such as chronic disease management and radiology. There is a heavy emphasis on building assessment skills. In most sites ECPs are able to prescribe a limited number of medications (Mason et al. 2004). ECPs work in a variety of operational settings including part of ambulance dispatch, A&E, MIUs, primary care and walk-in centres. In the ambulance setting most work as single responders. Clinical support and supervision is provided from either the ambulance service or host provider and includes clinical mentors, consultants, GPs and staff in A&E departments. Most programs are using expanded versions of existing ambulance patient report forms as the standard for clinical documentation.

Mason et al.'s (2004) preliminary evaluation of the national ECP scheme identified several important logistic issues and challenges. ECPs reported that overall rapid integration into local health service networks was possible. However, there were pockets of resistance, especially among nurses and GPs, and some provider groups such as A&E departments. Strategies used to help overcome barriers involved educating relevant stakeholders about the role and benefits of the ECP role and inviting their greater participation in the programs. Most recruitment occurred from ambulance services and there was some concern therefore that this could lead to a drain on existing services. The new role did, however, provide opportunity for career progression for paramedics who may otherwise have left the service to pursue other career options. ECP rotation between settings was seen as very important to build on the professional development of the role. Replacement of staff during training and supervision was an issue in some areas.

Mason et al.'s (2005) second phase evaluation of the national ECP trial provided a more quantitative analysis of the program's progression. Data were collected from three sites covering rural and urban settings capturing a broad spectrum of ECP provision across varying operational frameworks. However, comparison across the three sites was hampered by differences in process and outcome indicators. The ECP settings included a standard ambulance response, out of hours primary care response, a hospital emergency department, and a walk-in centre. The three-part evaluation involved a controlled

observational study including a patient survey of their experience and analysis of clinical records; telephone interviews with ECPs, other health care providers, and local key stakeholders; and an economic evaluation of the scheme.

Comparisons were made between the patients ECPs saw and those treated through conventional methods comprising paramedic dispatch and subsequent treatment at hospital, across the three sites. They showed that patients treated by ECPs underwent fewer investigations such as blood tests and ECGs and received more advice and treatments such as wound treatment and drug treatment. There were significantly fewer hospital or A&E admissions among ECP patients, with more patients being discharged to their own places of residence. Reducing transports to hospital A&Es has been one of the key indicators of the success of the UK national ECP program. Hospital A&E attendances have typically been reduced by 50 per cent in most pilot sites. Appendix E shows recent hospital attendance avoidance statistics from the South Yorkshire/Sheffield ECP scheme as reported by Cooper (2005).

Patient questionnaire responses showed that more patients from the ECP group reported being very satisfied with their consultation, and 77 per cent indicated they would prefer ECP treatment in the future rather than seeing a doctor or other health professional. There were no differences in patients' self-reported health status between the groups at 3 days and 28 days follow-up after the event.

Mason et al.'s (2005) costs analyses revealed that staff costs were typically higher for paramedic-treated patients compared to ECP-treated patients. ECPs' much lower per minute contact costs offset the longer on-scene patient contact time compared with paramedics. Fewer investigations by ECPs also translated to lower overall treatment costs compared with in-hospital treatment. Total costs for treating the patient were estimated at £360 for ECPs and £651 for patients treated by paramedics and subsequently treated in hospital. This represents a cost saving of over 40 per cent compared with conventional methods of pre-hospital emergency care. A table showing estimated cost differences between ECP and conventional paramedic/hospital treated patients is included in Appendix F.

The reported cost savings were achieved with apparently no decline in the level of self-reported health status following treatment. However, when unplanned patient contact was made related to the initial acute health episode, presumably due to ongoing health concerns, there was some suggestion that under-treatment of some patients may have occurred at first contact.

Overall the findings suggest that the national ECP scheme is progressing according to expectations. A review of ECP operations within the SYAS by Smith (2005) shows that one of the program's objectives, reducing hospital attendance and admissions, was being met. For patients seen by SYAS ECPs, hospital attendances reportedly were reduced by 59 per cent and hospital admissions were reduced by 14 per cent. Although the number of patients seen by ECPs was lower than those projected, they have shown an upward trend over the 6 months from April to October 2005.

2.10.7 The London Ambulance Service ECP scheme

Halter and Marlow (2005) recently reported on the London Ambulance Service ECP program that began in 2003 as part of the national pilot program. This is one of the most recent and detailed ECP reports conducted. ECPs now operate in five PCT sites: Bromley, Croydon, Havering, Hounslow and Wadsworth. The scheme's main objectives were to reduce hospital A&E attendances, reduce usage of double-crewed ambulances, improve community patient care, integrate the new role with primary and community care services and develop new career pathways for paramedical staff.

2.10.7.1 Scheme Objectives and Defining Elements

Halter and Marlow describe the defining elements of the London ECP scheme. ECPs work in self-managed teams, reporting to the project manager and to the local ambulance operations manager. The scheme has allowed ECPs to be fully engaged in discussing program development, setting direction and trialling change. Various roles such as ECP coordinator have evolved and gradually been formalised. Each PCT scheme is based on local demand analysis, adhering to core standards but evolving to suit local needs.

There are differences in ECP operational settings between PCT sites but these include hospital A&Es, minor and major injury units; GP surgeries, including carrying out home visits; from ambulance stations as primary response including out-of-hours; minor injury units, and walk-in centres. Each area's ECP coordinator is responsible for negotiating locally accessible care pathways, according to the availability and demand for each site. Examples of these include DVT clinics, local social services, falls clinics, alcohol advisory services, psychiatric services, aged care services, out-of-hours doctors and dentists, MIUs, district nursing services, community nutrition services, rehabilitation services, occupational therapists, physiotherapists and others. All ECPs work alone once they have completed all stages of training.

2.10.7.2 Training

ECPs undertake a 2-year modular diploma in Health Care Practice. To date there have been 300 modules delivered to ECPs provided by the St George's Medical School. There is a structured interdisciplinary approach to education with the following format:

- case history
- physical examination
- taking and interpreting diagnostic tests
- provisional diagnosis
- decision to continue pathway or transfer
- prescribe and administer treatment
- ongoing clinical care
- communication and education.

Clinical development is designed to complement the modular education, led by a specially formed team and overseen by the LAS medical director. There are regular clinical review sessions and a pro forma for submission of cases for discussion.

ECP-specific clinical performance indicators and a clinical competency and clinical review framework are currently being developed. The ECP scheme is open to paramedics, EMTs, nurses, occupational therapists, and physiotherapists. The London ECP job description and person specification is presented in Appendix G.

2.10.7.3 ECP Utilisation

To evaluate the impact of the ECP scheme a database was developed of all ECP-attended calls from the start of the scheme. Initially the data were collected manually through Patient Report Forms (PRF) but were later enhanced with electronic data from an electronic management information system. Patient disposal pathways were categorised into one of four categories to fit the national data set:

- treat and leave at home
- treat and leave at home with referral to another care pathway such as a GP
- treat and convey to a non-A&E pathway
- treat and convey to A&E.

The number of calls attended by ECPs has steadily increased over time in each of the sites. ECPs attend all categories of calls with a larger percentage of non-emergencies: Red 17 per cent, Amber 38 per cent, and Green 45 per cent. It was decided that ECPs should attend all categories of calls because this would substantially increase the potential calls available and therefore help to overcome problems of underutilisation previously experienced in other schemes. The most commonly coded call category was Illness Unknown (38 per cent), followed by Illness Known (19 per cent), and Falls (19 per cent). Common illnesses and injury such as abdominal pain, malaise and fractures accounted for 80 per cent of all cases.

Job cycle times, measured from the time the call is received to the time the practitioner reports available, is on average 82 minutes with a standard deviation of 43. This does not include transport time when the patient is taken by regular ambulance or by other means. As would be expected the shortest average time is for treat and leave at approx 75 minutes. Overall job cycle times are longer for ECPs than for ambulance responses. The average response time across all code categories is 21 minutes. ECP response time is longer to non-urgent categories and shorter to urgent categories compared to ambulance response. ECP response is therefore contributing to improving emergency category response times overall. The UHU rate for ECPs is 41% with an upward trend, and sufficient demand to support much higher utilisation.

2.10.7.4 Conveyance rates

The overall conveyance rate by ECPs over the course of the scheme was 57.2 per cent with a slight downward trend. When ECPs were the sole responder to a case, 44 per cent of patients were conveyed

to A&E. When there was a multiple vehicle response (ECP and ambulance), 55 per cent of cases were conveyed by ambulance and 17 per cent were conveyed by ECP. It was unclear to what extent multiple responses were due to erroneous multiple dispatches or due to requests from an ECP or ambulance.

Most non-conveyed referrals were to GPs, followed by other hospital services, MIUs and common health services such as district nurse and intermediate care teams. Other referrals included social services, the police and friends and family. There were significant differences in conveyance rates between individual ECPs, but the cause for this practice variation was not examined.

2.10.7.5 Patient satisfaction

Patient satisfaction surveys were distributed to a representative sample of 744 ECP patients and 855 ambulance response control group. Overall 93 per cent of patients were satisfied or very satisfied with the response time, with a slightly higher percentage among the elderly and no differences found between ECP and ambulance attended patients. Satisfaction with the quality of care provided was 95 per cent for both ambulance and ECP attendances. No correlation was found between self-reported quality of care and trend in the patients' condition following treatment. Ninety-nine percent of patients stated that the advice they received fully or partly suited their needs. When patients were asked about aspects of care provided such as the carer's ability to answer questions and explain the patient's condition, friendliness and quality of examination, 90 per cent felt that their treatment was good or very good. ECPs were rated better than paramedics at explaining what was going to happen and passing on relevant information, allowing the patient to feel more comfortable with the decision.

2.10.7.6 Patient outcomes

A sample of those patients contacted for the patient satisfaction survey were sent a quality of life measure questionnaire to evaluate patient health status four weeks after their '999' call. The quality of life survey measures patient level of functioning along several indicators including general health, physical functioning, emotional well-being, social functioning and pain experienced. Although this sample was small, there were statistically significant differences found in some patient health status indicators between those who were taken to A&E and those who were left at home following treatment by ECPs. These health scores were higher for those not transported suggesting appropriate ECP decision making, although the differences may also have been due to this group being slightly younger than the transported group.

2.10.7.7 Out-of-hours scheme

An evaluation of the out-of-hours (OOH) scheme operating in Bromley was conducted. OOH calls comprised mostly non-urgent responses to elderly patients, 80 per cent being over the age of 60. On average there were seven OOH cases per day and the average on-scene time was just under one hour. Seventy-eight percent of these patients were treated and/or advised at the scene and not conveyed. Of those not conveyed, 34 per cent were referred to alternative care pathways including GPs, social services,

district nurses, diabetic care teams and homecare. Patient satisfaction and outcomes were measured by conducting interviews with patients 72 hours after their ECP attendance. The vast majority of patients were extremely satisfied with ECP care. Patients were clear about their care and few reported deterioration.

2.10.7.8 ECP views of training and the ECP scheme

ECPs' views on various aspects of the ECP scheme were elicited by conducting training module evaluations and personal interviews. Some of these were conducted early in the scheme (February 2004) and again after the scheme had been allowed some time to mature and evolve (February 2005). Module evaluation responses indicated that both early and later modules were well received and considered to influence practice. A selection of module feedback scores including physical assessment, clinical decision-making, minor injuries, management of minor health problems and applied pharmacology was reported. The modules that were reported on most positively were physical assessment, management of minor health problems and applied pharmacology. These modules were considered extremely relevant and helpful in practice.

In interview responses ECPs varied in their views about the role. Some saw it as being more medically focused than normal paramedic practice while others saw it fundamentally as a paramedic role with additional options in terms of referral to other than A&Es. Most saw it as a role that offered a greater range of services and different options for patients. Some viewed working alone as offering greater autonomy while others reported the experience as feeling unsupported or lonely.

Differences in reported satisfaction with education between the early and later interviews were found. In the 2004 interviews education was mentioned positively with regard to structure, standard of lectures and focus on patients. In 2005 views varied widely but were presented negatively on the whole. Key criticisms were that the academic content did not focus on the ECP role specifically, being very nursing focused. The chronic illness module was viewed in detail most negatively, but these details were not specified in the report. Teaching from specialists was well received. The higher education style of self-directed learning was considered difficult and not appropriate by some respondents. Some related the sense that they were not being assessed in what they considered was needed to be competent in the role.

A difference in role confidence between ECPs was found, but was thought to increase over time on the scheme. The majority of respondents described themselves as confident as people but cautious as ECPs. Those self-described as confident stated this was because they would transport any patient they felt worried about. Newer ECPs described feeling anxious about making clinical decisions by the additional responsibility, increasing knowledge and wider range of options available to them.

In early interviews there was a sense of lack of understanding of and support for the scheme from within the service and from colleagues. This was seen to have improved in later interviews, although there was still the sense of lack of support and isolation from the rest of the ambulance service. Placements, clinical supervision and mentoring posed some difficulty, especially early in the scheme. Placements were seen

as a core part of the scheme as was supervised practice. ECP sense of where the role belonged was somewhat uncertain in the early stages. In later interviews there was a strong sense that the scheme was here to stay.

2.10.8 Recent UK ECP developments

Variations in training and practice between ambulance trust, during the ECP national pilot phase enabled the testing and auditing of a wider range of possible structures for the ECP model. The UK national ECP program coordinator is currently pulling individual educational frameworks together to form a national competence and curriculum framework. This framework will form the basis for the role to go through British regulation ensuring the necessary level of patient safety via professional accountability and ensuring parity and consistency in the role. The national competence and curriculum framework is due to be published in the near future (B. Connell, personal communication, 24 January 2006).

The ECP utilisation rate is expanding and the scheme seems to be progressing rapidly through most parts of the UK. The ECP scheme is emerging as the dominant expanded practice model in the UK and most of the performance indicators have so far shown it is working well. A range of recently compiled national ECP usage statistics provided by the Mersey Regional Ambulance Service can be found in Appendix H.

2.10.9 Views on UK expanded role development

While the development of expanded care models has been generally well received it has also attracted some criticism. For example Woollard (2004) has been critical of the way the ECP program is being developed in the UK. He asserts that the NHS vision regarding the development of the ECP model consisted of highly trained autonomous practitioners capable of making treatment decisions without being bound by the limitations inherent in protocol-driven practice. However, in reality, the ECP model still operates on protocol-directed care rather than autonomous practice. Woollard has called for broader-based training at a postgraduate level to enable true autonomy of practice.

Promoting reform is a challenging but necessary component of creating new roles. Squires and Mason (2004) reported there was resistance to developing an alternative response paramedic practitioner scheme in the South Yorkshire Ambulance Service. This came from both paramedic staff not involved in the program and communications room operators. Most thought that the PP scheme was a good way of dealing with non-urgent cases. However, many thought that overall the scheme had a detrimental effect on normal ambulance duties. This was because PPs in this program operated as part of the normal ambulance response and were seen as a drain on normal ambulance core functions. As PPs were primarily responding to non-urgent cases there was a view that they could potentially become de-skilled in the management of more serious and acute cases. Communications operators often found it difficult to determine whether a given case was suitable for PP dispatch while working under pressure and therefore tended to avoid using them. As a result the PP response was underutilised. Designing expanded care

models that allow practitioners to respond to all categories of calls and making them supernumerary should overcome these problems. This policy has been used in the London Ambulance Service ECP program and has been shown to be effective.

Scott and Carney (2004) have argued that new roles must be underpinned by fundamental change to create a system that is integrated and clinically supportive of the role. These changes include breaking down barriers between professional groups to create functional teams that are supportive of each other and focused on patient needs. A lack of coordination and support between healthcare groups risks development of ad hoc new roles that fail to deliver what they were designed for.

The need to revisit traditional ways of measuring health care performance has also been identified. Cook (2003) has questioned the appropriateness of some performance indicators such as response times or on-scene times, arguing that they may no longer adequately measure or reflect patient care outcomes in light of expanded practice models.

2.10.10 Summary and main points of UK expanded practice models

Expanded care models have been introduced to provide better health services, help fill deficits in health provision and provide new career pathways for paramedics and other allied health workers.

The development of various models has been guided by predetermined objectives and evolved to meet local community needs. The precise nature of the work and deployment context changes as various aspects of the schemes are tested and new needs emerge.

To reflect, these education and training schemes have typically been designed with a common subject base and have provided additional training that accords with the skills required of practitioners in various contexts to provide an individualised response.

Participants of various schemes have emphasised the importance of:

- adequate education and training especially in patient assessment skills, knowledge of chronic and occult conditions and non-acute care in general
- clinical governance, support and provision for clinical reporting
- development of relationships with other healthcare providers
- formal establishment of clinical referral pathways for patients
- involvement in program development and testing
- educating allied health workers and the public about the new role.

Recruitment into the various programs has occurred mainly from ambulance personnel, although in the more advanced ECP programs recruits have also been sourced from the nursing profession. Paramedics with extensive experience were chosen for most of the pilot programs, and subsequently less highly

trained EMTs with extensive experience have been allowed into the ECP programs, at least in some locations.

The nature and scope of education and training has varied considerably depending on the model. This has ranged from ambulance in-service training, or training by a GP or local health provider for community paramedics, to nationally accredited university education courses combined with practical training component placements in various health institutions for ECPs.

The ECP model in various forms is evolving as the dominant expanded care model in the UK and is now seen less as a project and more as a permanent scheme. There is still uncertainty about placement and tasking but these are becoming increasingly defined as the models become established.

Inadequate planning and governance in some cases has led to role underutilisation and has inhibited implementation of the full scope of practice intended for the role.

Most of these models have generally been well regarded and supported by consumers and health outcomes have been comparable to traditional methods of providing healthcare.

Although most schemes are still relatively new, many have demonstrated an ability to meet many of their objectives while remaining cost-effective and providing a high-quality service to clients.

Some have argued that in order to realise a significant improvement in pre-hospital health care, the development of new health provision roles should be just one component of fundamental health system change.

Chapter 3

Physician Assistants as medical care extenders

3.1 Introduction

Physician Assistants (PA) have been used as extenders to the medical care provided by doctors in a range of settings including remote, rural and major metropolitan centres for more than 30 years in the USA and more recently in Canada, the UK and other parts of the world. The following sections summarise various aspect of the PA model including:

- history of the physician assistant model
- operational locations within the USA
- scope of practice
- training and education
- relationship with physicians and allied health professionals
- legislation and regulation in the USA
- recent PA trials in the UK.

PAs have an important and valuable role in meeting workforce needs in the USA and the extensive use of PAs across a wide variety of settings for many years is testament to the success of this model. There are more PAs working in the USA today than there are doctors working in all aspects of healthcare in Australia (Hooker, 2005). This model may provide a viable option for extending healthcare provision beyond that already provided by doctors and NPs. A brief overview of the PA model operating in the USA, UK and other countries is provided below. A more comprehensive evaluation is provided by O'Conner (2005).

3.2 Physician Assistant history

The physician assistant profession began to evolve some 40 years ago in the USA in response to a shortage of nurses and allied health professionals. Charles Hudson, the president of the National Board of Medical Examiners, first suggested the concept of new types of health personnel to extend physician services in the United States in 1961. Adapting the idea and recognising changing medical service and personnel needs in the United States health system, Dr Eugene Stead of Duke University Medical Centre in North Carolina, developed the first Physician Assistant (PA) training program in 1965 (Cawley & Hooker, 2005). The first physician assistants enrolled in the training program were Navy corpsmen who had received considerable medical training during their military service and during the war in Vietnam. Dr Eugene Stead based the curriculum of the physician assistant program in part on his knowledge of the fast-track training of doctors during World War 2. Physician assistants were endorsed by the American Medical Association in 1969, four years after the first physician assistant program was developed. Today there are 136 educational physician assistant programs throughout the United States accredited by

the Accreditation Review Commission on Education for the Physician Assistant (American Academy of Physician Assistants, 2005b). In Canada the Canadian military has been training physician assistants since 1994 and is currently developing legislation that will allow military physician assistants to function in the same capacity within a civilian context. The Netherlands has instituted three university-based programs to educate physician assistants and is planning to expand these programs in the near future. Taiwan inaugurated a physician assistant education program in 2003 to convert nurses into physician assistants.

In the United Kingdom in 2003 as a response to local recruitment difficulties for General Practitioners and the shortage of the medical workforce in the Sandwell and West Birmingham areas, 15 physician assistants were recruited from the United States. Between April and September 2003, three physician assistants started working in primary care, and in 2004, a second recruitment round resulted in another 12 arriving by June (Woodin, McLeod, McManus & Jelphs, 2005).

3.3 Operational locations

Physician assistants are licensed in all 50 United States and are authorised to prescribe in all but three states. Physician Assistants are clinicians who by law practise medicine under the supervision of a physician (U.S. Bureau of Labor Statistics, 2004). In some cases, however, physician assistants may be the principal care providers especially in areas such as rural or inner-city clinics where the presence of a physician is restricted to only one or two days a week. Physician assistants may also make house calls or go to hospitals and nursing care facilities to check on patients, under the care of their supervising physician, reporting back to the physician on completion. Many physician assistants work in primary care specialties, such as general internal medicine, paediatrics and family medicine. Others specialise in areas that include general and thoracic surgery, emergency medicine, orthopaedics and geriatrics. Those physician assistants specialising in surgery provide preoperative and postoperative care and may work as first or second assistants during major surgical procedures. Of the 58,000 physician assistants currently in practice in the United States, the majority work in ambulatory settings but with significant numbers in specialty and subspecialty areas (Cawley & Hooker, 2005). Approximately half work in primary health care settings and the other half in medical and surgical specialty practices. Of that equation almost a quarter of the physician assistants are located in rural and frontier counties, usually in communities of less than 10,000 populations, and 10 per cent are in towns of less than 5,000 population. A further 12 per cent work in inner cities. The estimated number of clinically practising PAs by specialty area is tabled in Appendix I.

In the United Kingdom 14 of the 15 physician assistants remain in the country and are currently practising in a primary health care setting, with eight employed full-time in general practice, four employed full-time in the accident and emergency departments of Sandwell Hospital and the City Hospital, and a further two employed part-time at Sandwell Hospital and part-time in general practice (Katikireddi & Rushworth, 2004). According to the American Academy of Physician Assistants census report (2005a), the states with

the largest numbers of clinically practising physician assistants are New York with 9 per cent, California with 8 per cent, Texas with 6 per cent, Pennsylvania with 6 per cent, Florida with 6 per cent and North Carolina with 5 per cent of the total national PA count.

3.4 Scope of practice

In the United States physician assistants practise under a “dependent practice” status, under the general supervision of a physician, and since the inception of the physician assistant model there has been no movement otherwise (Cawley & Hooker, 2003). The general medical education of physician assistants gives them the ability to move between various clinical settings and specialties including primary care, trauma units and hospitals. In all health care settings physician assistants are able to contribute to the diagnosis and treatment of common medical problems and provide wellness checks. Physician assistants routinely perform liver biopsies with supervision from a gastroenterologist; they also work detoxifying patients, making routine visits in nursing homes, on call in neonatal units, performing wellness physical assessments, assisting in cardiothoracic surgery, staffing emergency departments and oncology centres. The role of physician assistants as sigmoidoscopists, using advanced fibre-optic scopes, is a well-established practice in the United States (Cawley and Hooker, 2003). Appendix J tables the estimated number of visits to PAs in 2005 for specific disorders.

The scope of a physician assistant’s practice corresponds to the supervising physician’s practice. In general a physician assistant will see many of the same types of patients as the physician, however, the physician generally handles the more complicated medical cases or those requiring care that is not a routine part of the physician assistant’s scope of work. Physician assistants are taught to know their limitations and refer to or consult with physicians appropriately.

The prescribing rights of the physician assistant was a key initiative undertaken by almost all states in America, often with the intent of improving access for rural and underserved populations (Hooker & Cipher, 2005). The Physician Assistant was first given prescriptive authority in 1969 and by 2003 physician assistants had prescriptive authority in 47 states, the District of Columbia and Guam. In 2005 49 states and the District of Columbia and Guam allowed physician assistants to write and sign prescriptions without a physician co-signature. Physician assistants are authorised to prescribe controlled substances in 40 jurisdictions. In medical settings where the physician assistant is employed by the federal government, such as the Department of Veterans Affairs, the uniformed services, and the USA Public Health Service, and in many rural clinics, the physician assistant’s prescribing rights are similar to those of a physician. According to Hooker, Cipher and Sekscenski (2005) there are no studies to date that have examined the NP or Physician Assistant’s prescribing rights from a national standpoint.

3.5 Training and education

In the United States there are 136 successful physician assistant programs. The typical physician assistant

program is usually 24–27 months full-time duration and requires the applicant to have at least two years of college and some health care experience prior to enrolment. The majority of students entering into the program hold a Bachelor or Master's Degree combined with 4 years of health care experience. Many physician assistants have backgrounds as registered nurses, while others come from varied backgrounds such as military corpsmen/medics, and allied health occupations such as paramedics. All states and the District of Columbia have a legislation governing the qualifications and the practice of Physician Assistants (US Department of Labor, 2005). All jurisdictions require that physician assistants sit and pass the Physician Assistants National Certifying Examination, administered by the National Commission on Certification of Physician Assistants (NCCPA). The Physician Assistants National Certifying Examination is open to graduates of accredited physician assistant education programs. Only applicants successful in completing the examination may use the credential "Physician Assistant – Certified" (PAC). To continue practicing as a Physician Assistant – Certified, physician assistants must complete 100 hours of continuing medical education every 2 years. Every six years physician assistants must pass a recertification examination or complete an alternative program combining learning experience and take-home examination.

Physician assistants are trained in the medical model. In some schools they will attend many of the same classes as medical students. A main difference between the physician assistant education and the physician education is the amount of time spent in school, not the core content of curriculum. The length of the physician assistant program is approximately two-thirds that of the standard medical program. Physicians, on completion of their degree, are required to do an internship or residency whereas physician assistants do not. When comparing the physician assistant to the physician it is important to note that physicians have complete responsibility for the care of the patient; physician assistants share that responsibility with the physicians (Woodlee, 2004).

3.6 Relationship with physicians and allied health professionals

An important potential problem that was posed by the introduction of physician assistants was the reluctance of physicians to accept another practitioner. The initial challenge with the acceptance of the physician assistants was they were mistakenly perceived as being in competition with physicians. However, as accumulating research evidence demonstrated that physician assistants complemented rather than substituted for physicians, competition became less of an issue and support for the physician assistant's presence began to grow (Cawley & Hooker, 2003). Physician assistants in the USA are now generally well accepted by the medical profession although there are still pockets of resistance. Acceptance by nurses, pharmacists and other allied health occupations was slower than by physicians but eventually came about. In the United States the approval and endorsement of PAs by organised medicine helped ease their reception. Physicians who work with Physician Assistants claim that the advantages of the PA far outweigh the disadvantages. The adoption of the physician assistant's role will allow physicians to work fewer hours, both in the office and on call, and as they delegate many tasks they can provide better services (American Academy of Physician Assistants, 2004). The Physician - PA team is effective

because of the similarities in physician, and physician assistant training, the profession of physician assistants to their commitment to practise with supervision and the efficiencies created by utilising the strengths of each professional in the clinical practice setting.

The relationship between physician assistant and physician is important; equally important is the relationship with the nursing community, especially NP (Hutchinson, Marks & Pittilo, 2001). Although these groups perform similar duties in the workplace, substantial differences exist between them in the philosophical model of practice used, the number of hours of clinical experience acquired during training and whether training is specific (NPs) or general (Physician Assistants). Politically physician assistants consider themselves to be part of medicine as a member of the physician-led team. In contrast, NPs come from a nursing background and thus affiliate most often with nursing. It is the setting and the specialty that determines how the two professions practise, rather than legislative or professional regulations.

The American Medical Association's 1994 socioeconomic system survey of approximately 4000 physicians showed that although employment of physician assistants and NPs may raise practice costs, the increased efficiency may reduce the per-unit cost of the price of services provided by the practice (Harris, 2005). Findings also suggest that there are no differences in satisfaction between provider types regardless of patients' sociodemographic characteristics and health status (Hooker, Cipher & Sekscenski, 2005). This research adds to the growing body of literature indicating that physician assistants and NPs in primary care are meeting consumer needs. Mittman, Cawley and Fenn (2002) conclude that numerous studies have shown that the quality of care given by physician assistants is at the level of that given by physicians in comparable situations, with high levels of patient satisfaction.

3.7 Legislation and regulation

Each state in America writes their own laws governing the practice of physician assistants and one should expect to find variation in the structure and the content of most of these laws. The American Academy of Physician Assistants produced a model physician assistant practice act in 1982 but updates its model licensing law when necessary to keep pace with occupational regulation changes. The goal of the model law is to standardise certain provisions contained in physician assistant practice acts. For example, licensing laws include requirements for education and examination. For physician assistants graduation from an accredited physician assistant program and passage of the national certifying examination are the two recommended requirements. Great progress has been made in standardising the regulation of physician assistants. All states, the District of Columbia, and the majority of U.S. territories have enacted statutes and regulations that define physician assistants, describe their scope of practice, discuss supervision, designate the agency that will administer the law, set application and renewal criteria and establish disciplinary measures for specified violations of the law (American Academy of Physician Assistants, 2005c).

Malpractice has been the subject to arise when discussing the employment liability of the physician assistant. To date, the liability of physician assistants in the United States is considerably less than the

liability of physicians in comparable roles, as measured by medical insurance premiums and malpractice cases (Cawley & Hooker, 2005). From a legal perspective, enabling legislation empowers physician assistants to perform any clinical task within the scope of practice of, and sanctioned by, the supervising physicians (Mittman, Cawley & Fenn, 2002). Although remarkable achievement of legislation had occurred across all states, these practice acts continue to vary in delineating what physician assistants can do (such as prescribe drugs and be reimbursed for their services). In states where the legislation is restrictive, access to care tends to be inhibited; where legislation is more permissive, access to care tends to be better. For example, when the Texas practice act was changed in the early 1990s to allow physician assistants (and NPs) to function in rural areas with greater responsibility (as part of the Federal Rural Health Clinic Act), within two years the number of rural practice sites occupied by a physician assistant or a NP tripled in numbers (Wing, Langelier, Salsberg & Hooker, 2004). The lack of consistency in state practice environments for physician assistants, NPs and certified nurse –midwives was analysed in 1992 by a group of health workforce researchers at the Bureau of Health Professions in the Federal Health Resources and Services Administration. They concluded that the more favourable the legal practice environment for the three professions, the larger the supply of practitioners available to serve the people of the state.

3.8 UK trials

In the United Kingdom the physician assistants working in primary care have commonly generated a highly positive response by clinical and non-clinical colleagues. Medical staff have also positively received the physician assistants working in the Accident and Emergency department. In the primary care setting, physician assistants were found to undertake a wide range of clinical work covering a similar spread of presenting problems to their supervising GP.

A number of factors have enabled the integration of the United States physician assistants included in this study into the NHS and with colleagues from other professions. These include:

- structural factors
- the current policy environment
- the considerable experience of the Physician assistants
- the induction and supervision provided by host organisations.

There are also a number of factors that have impeded the integration of the physician assistant in the United Kingdom. These include:

- the lack of prescribing rights for physician assistants. The absence of any regulatory framework for physician assistants was widely recognised in the UK as a barrier to resolving the prescribing problem
- difficulties in requesting radiological investigations
- supervision issues in the Accident and Emergency departments
- differences between the UK and the USA practice.

There is no evidence to date that the introduction of the physician assistants has resulted in any redefinition of professional boundaries or re-profiling of work between professions. The Woodin, McLeod, McManus and Jelphs (2005) report, informed by patients' views, suggests that the physician assistant working practices successfully facilitate patient-centred care, which is a key goal of the NHS policy. The cost effectiveness of physician assistants compared to General practitioners varies. In some cases the lower cost of the physician assistants is offset to some extent by longer consultation times and a lower volume of activity; in other cases the cost effectiveness of the physician assistant is compelling. More important is the fact that the physician assistants have an increased medical capacity in the face of an inability to recruit general practitioners to these deprived localities in the United Kingdom. In order to realize the potential of physician assistants working in the NHS, the physician assistant profession requires appropriate regulatory status in the United Kingdom. The physician assistant profession's "dependent practitioner" status does not fit well with the United Kingdom's professional culture. There are current plans in the United Kingdom to enable physician assistants to register as Medical Care Practitioners and achieve regulated status. The role planned for Medical Care Practitioners in the United Kingdom is as autonomous practitioners. In this instance the partnership/relationship with a supervising doctor may be lost, despite findings that this relationship has often been identified as offering a positive model of patient-centred care.

3.9 Summary of the Physician Assistant model

The Physician Assistant model evolved in the USA in response to shortages of allied health professionals in the mid-1960s. They are now licensed in all states of the USA.

PAs work in close collaboration with and under direct supervision of doctors in all areas of medicine. They work in diverse settings including rural and remote communities and hospitals, and a variety of regional and metropolitan medical establishments with GPs, medical specialists, and in emergency medicine. After facing a significant amount of initial resistance from the medical and allied health professions, the PA model is now widely accepted by their health colleagues and by health consumers. The PA model is being adopted in many other parts of the world including Canada, UK, the Netherlands and Taiwan.

Chapter 4

Development of expanded practice roles in Queensland

4.1 Introduction

There are several possibilities for expanding the scope of paramedic practice in Queensland. The range of examples presented in this paper has varied significantly both in scopes of practice and in their operational context. In addition to the Community Paramedic and Paramedic Practitioner roles that have developed as extensions to normal paramedic practice and recruited almost exclusively from within the ambulance services, other models such as the UK ECP and the USA PA should also be considered. The potential for recruitment into these latter programs is wider and includes paramedics, nurses and other allied health workers. The scope of practice of the ECP and, to a greater extent, the PA model is much broader than of the other expanded paramedic practice models presented.

The implementation of paramedic expanded practice models in the UK and elsewhere has shown that it has the potential to significantly reduce the number of ambulance transports and hospital A&E attendances by appropriately treating patients at home, and by redirecting some non-urgent cases to alternative medical care destinations. The evidence from evaluation studies conducted to date has shown that this is being done without compromising the safety of patients and is achieving a high degree of patient satisfaction. This is being achieved by ensuring that paramedics are provided with the appropriate training, logistical and clinical support and clinical governance.

The cost effectiveness of these programs has also been demonstrated. Cost savings to the UK health system have occurred through the reduction of double-crewed ambulance attendances and transports, reduced home attendances by GPs and a significant reduction in patient A&E attendances. Most recruitment into the UK's ECP scheme has been from paramedics and, to a lesser extent, from nurses, who then typically undergo 15 to 18 weeks of clinical education followed by a similar length of clinical placement time with various medical providers. Formal education and training is usually provided through a suitably designed university program. This shows that training paramedics and nurses for the ECP role can be done economically and provide a high return for the money invested.

The clinical skill level of UK paramedics typically recruited for ECP programs is between that of Queensland Advanced Care (AC) and Intensive Care (IC) paramedics (D. Burns, personal communication, January 2006). Less highly clinically trained EMTs who have extensive on-the-job experience are also being recruited into some UK ECP programs. Hypothetically, there is therefore abundant potential for paramedic recruitment into similar programs up to the ECP level in the Queensland Ambulance Service. Expanded practice training programs in Queensland could be designed with multiple entry points to enable both AC and IC paramedic recruitment into the programs.

Paramedic expanded practice program trials began approximately five years ago in the UK. The ECP model has evolved as the preferred option for paramedic expanded practice nationally. The UK is now preparing for a national rollout of the ECP scheme (Belle Connell, personal communication, 24 January 2006). There are plans to reduce the number of paramedic double-crewed ambulances and increase the number of ECPs in many parts of the UK, for example the Dorset Ambulance Trust (Dave Burns, personnel communication, 25 January 2006). The rapid progression of UK paramedic expanded practice programs is further testimony to the efficacy of these schemes.

Paramedic expanded practice programs have significant potential to contribute to rural and remote health in Queensland. The treatment of many medical conditions could be expedited and the number of long transports could safely be significantly reduced. With adequate training in chronic disease management, and limited prescribing abilities under MO consultation, paramedics working in remote communities could provide a service similar to that of NPs. Paramedics could also take up roles that promote community health and well-being such as injury and disease prevention awareness programs, provide basic healthcare monitoring needs such as the ongoing management of diabetes, heart disease, hypertension and many other chronic conditions. They could also provide assistance to doctors in regional hospitals in many areas such as suturing, taking X-rays, triaging and generally assisting in emergency departments. As shown above, some of these activities are already being undertaken in many rural and remote areas, but these could be expanded and formalised to provide an improved and more uniform service.

In metropolitan settings the range of ambulance services could be expanded, taking healthcare to the patient in the community. Adopting a MODP model similar to that used in the UK can provide patient 'disposal' alternatives to transport to hospital A&E centres. Many patients could be treated and left at home, reducing transports and hospital A&E attendances. Care of the elderly could be improved, especially after hours, by treating appropriate conditions at home and in the nursing home and reducing the number of unnecessary transports following falls and minor events. MODP alternatives to hospital attendance also have the potential to increase the demand for 24-hour medical centres making them more economically viable, and greater use of these would further reduce the pressure on hospital A&Es. Reducing the number of emergency crews required by implementing a program similar to the ECP model would enable significant savings to be made by the ambulance service.

4.2 Considerations and challenges

The introduction of an expanded practice model for Queensland presents a number of organisational issues and challenges that need to be dealt with. These include but are not restricted to the following:

- There is a need to match the adopted model to the identified need; the scope of the adopted model will need to be determined.
- There is a potential for recruitment difficulties into the programs.
- The type of education and training that will be required and how this will be delivered will need to be determined.

- How the adopted expanded practice program will be regulated will need to be determined.
- The cost of setting up and maintaining the program needs to be considered and weighed against the potential benefits of introducing the model.
- Relationships with other health professionals will need to be defined and the potential for resistance to introducing new models needs to be considered and dealt with.
- The complexity of change management issues needs to be considered.
- How readily the new role will be accepted by patients needs to be assessed.

4.2.1 Determining the right model

A determination of the most appropriate model should be informed by needs analysis conducted for each of the areas identified in need of reform. The goals for developing expanded practice models might include one or a combination of the following:

- improving the delivery of health care in rural and remote areas where there is poor access to doctors and other health providers
- improving health care delivery and cost effectiveness by reducing patient transports to hospitals, providing more at-home treatment and alternative destination transports, and reducing or delaying ambulance dispatch to non-urgent cases in metropolitan areas
- improving access to health care by developing practitioners capable of providing highly skilled services, able to substitute for many of the services normally provided by doctors, under their direct supervision.

The capabilities of the health provider should match the needs of the community for which the role was designed. There is a need to identify and clearly articulate what the health needs in rural and remote locations are as well as in metropolitan areas that are not currently being met. A decision on which model would best serve the community can then be made. The model that would best serve the needs of people in rural and remote communities might be different to one that best caters for the needs of people in metropolitan areas. The rural and remote practitioner may be more a role of promoting and improving the health of the community than one of alternative response models. Variations can be designed within the models to account for these differences. There may be a need to develop more than one model, as was the case in the UK where both the ECP and the PA models have been implemented to meet different healthcare needs.

4.2.2 Recruitment

There is a need to consider the availability of suitable recruits into the schemes being proposed. For paramedic expansion programs it may be difficult to attract suitable candidates in sufficient numbers, or to entice them to work in the areas where the greatest need has been identified. This is especially the case in rural and remote areas where the incumbent paramedic may not be willing, or may not be suitable,

for the expanded practice role. The current shortage of qualified paramedics in some metropolitan areas could make it difficult to recruit sufficient numbers for some time. Therefore an analysis of the human resources available with which to implement the selected model may be necessary. Strategies to encourage workers to take up positions in areas of greatest need might include the use of time-limited contracts with a guarantee of return to their original positions.

Suitable candidates will need to be appropriately remunerated and incentives put in place to encourage participation. The potential for attracting suitable candidates into higher-level expanded practice programs would be greater as they may attract recruits from the nursing profession. There is potentially even greater scope for recruitment into PA programs, since candidates would come from diverse backgrounds including nursing and allied health fields.

4.2.3 Training

The amount of training required varies considerably for each expanded practice model. Community Paramedic and Paramedic Practitioner programs in the UK typically consist of a few weeks in-service training followed by clinical placement at a hospital or other medical facility for a similar duration. As stated above, training to the level of the UK ECP requires several months of university education and a similar length of clinical placement. Physician Assistants in the USA require approximately 2 years of postgraduate university education, followed by placement with an MO and ongoing recertification. The scope of practice of each of the models will determine the length and type of education and training required. Preliminary role objectives based on a needs analysis should inform initial educational curriculum development. The UK experience has shown that it will likely be necessary to modify the curriculum as the model evolves and the capacity of the role becomes clearer.

4.2.4 Regulation

The Queensland Ambulance Service is not part of Queensland health and regulation of new health care roles could potentially come under either of these agencies. Therefore jurisdiction would likely be determined by the operational context of the role. With the exception of the PA role, such programs have generally come under the control of ambulance services. The QAS is assuredly the best equipped and most likely authority to regulate an expanded scope program up to a level equivalent to ECP. This new role would likely be managed in much the same way as existing classifications of paramedic. The new practitioner role would likely operate outside of the direct governance of Queensland Health but practitioners would work in close association with GPs and hospital A&E staff. Supervision, clinical support, and governance could be provided from within a separate 'practitioner'-dedicated QAS division. The UK experience has shown that a project management team comprising representatives from the ambulance service, doctors and other health disciplines should be implemented, with a dedicated project manager. The role of this unit would be to oversee the planning, implementation, training and ongoing monitoring of all aspects of the new role. Clinical governance would be provided by the QAS when the

practitioner is deployed under typical circumstances such as an alternative ambulance response to appropriate code 2 and code 3 cases and code 1 cases with or without paramedic support. The GP or A&E director could share the responsibility for clinical supervision if and when the practitioner is working in either of these settings. In rural and remote communities clinical supervision could be shared between the QAS, local hospital A&E director and local GP according to where the practitioner is working at the time. Registration of the role would not be necessary or even desirable, as the overall legal responsibility for clinical practice would lie with the QAS.

Determining how PAs would be regulated is a considerably more complex decision that would need to be made at a high level of state government. PAs in the USA are regulated under individual state laws, administered by state medical boards or a separate PA board. PAs are licensed to practise under medical supervision and their supervising physician determines their scope of practise. There are various options for the regulation of PAs in Queensland and these are discussed in more detail by O'Conner (2005).

4.2.5 Cost of implementation

There is a need to consider the cost of implementing the various expanded scope programs against the potential deliverable benefits to improve public health. The evidence presented above has demonstrated that it is possible to create economical expanded practice models with various scopes of practice. The Community Paramedic, Paramedic Practitioner, Emergency Care Practitioner and the Physician Assistant models have all been developed cost effectively in different contexts. Most examples showed that the cost of setting the schemes cultivated favourable returns for the investment made in terms of improved and more efficient delivery of health care.

4.2.6 Change management

The introduction of a new health care role will impact to some degree on existing health providers and on the public. How it will impact will depend on the nature and scope of the new role, with broader-scope roles likely to present greater challenges for change management. Expanded practice models that are relatively narrow in their scope of practice like the community paramedic and the paramedic practitioner are not likely to be met with vast opposition provided that careful planning and groundwork is undertaken prior to implementation. The challenges of change management are substantial for the introduction of broader-scope models like the PA and would require significant political will to accomplish. However, the change required would be relatively small in scale when compared to the broad-based health system changes being undertaken in the UK. Two of the most important challenges that need to be dealt with are overcoming resistance from other health workers and gaining acceptance and support for the new healthcare model from the public.

Findings from overseas show that resistance to the introduction of new health care models is likely from various sections of the medical profession and allied health workers. The scale and source of opposition will depend on the type of model being proposed. The nursing profession is likely to oppose the introduction of broad-scope paramedic practice because there may be a perception that it would compete with their aspirations for founding and expanding the NP program. The PA proposal is likely to draw resistance from some doctors who may perceive it as encroaching on their field of expertise, as well as from NP proponents. Resistance has been largely circumvented overseas by accurately promoting the true nature of these new roles – that is, that they are intended to complement existing roles rather than compete with them. The involvement and support from other health workers is paramount to ensure the success of new expanded practice roles. Acceptance of the roles has increased as familiarity with the roles has increased, as the USA PA model and UK ECP model have shown.

Ideally, the role of the new health provider would fill an important niche that is currently unfilled, and the mutual benefits for other health carers of the new role would be recognised. Some of the strategies used to overcome barriers and encourage interdisciplinary teamwork when the ECP program was introduced in the UK included: encouraging personal sponsorship of the scheme within the intended clinical placement host provider by a medical practitioner, promoting familiarity of the scheme through shared working practices with other health professionals, and providing complementary education of nurses and ECPs targeted to equivalent and standard competencies and the involvement of senior executive personnel in establishing role relationships and patient care pathways (Mason et. al. 2004). The models proposed in this report would occupy a subordinate role to the medical profession and a complementary one to the various forms of nursing practice.

Experience from overseas shows that well-conducted paramedic expanded practice programs are generally well received by the public. Although the types of models being proposed have not previously been trialled in Australia, the high degree of acceptance of the NP program shows that the Australian public is not opposed to safe, carefully monitored, alternative means of delivering health care. To ensure acceptance, the public needs to be well informed by promoting the nature of the new roles and detailing how they will improve public healthcare. The table presents a summary of various expanded practice and alternative health care models in terms of recruitment, education, scope of practice and regulation of practice as they have been implemented overseas. It is intended as a general guide and does not represent a comprehensive or precise measure.

Model comparison: A summary of various expanded practice and new health models

	Community Paramedic	Paramedic Practitioner	ECP	Physician Assistant
Recruitment	Ambulance IC and AC paramedics	Ambulance IC and AC paramedics	Ambulance IC paramedics and registered nurses with A&E or primary care experience, AC paramedics with substantial (>4 yrs) experience	Ambulance paramedics with Bachelor of Health Science or similar degree and substantial experience, RNs with substantial nursing experience, some allied health workers
Education and Training	In-service training of several weeks duration, clinical placements with local health providers, on-the-job training with local health provider according to needs of local community (certificate program)	In-service or university-based education of several weeks duration followed by several weeks of clinical placements with various health providers including GPs and A&E depts (certificate or diploma)	Up to 12 months of university education followed by similar period of clinical placement with various health providers, additional university modules as required to meet local community needs (diploma or degree)	2 to 2 1/2 years of medical training, placement with a mentor physician (Master's program)
Scope of Practice	Community health monitoring inc diabetes, hypertension, COAD, medication compliance, other. Services inc suturing minor injuries, immunisations, other tasks deemed appropriate by local health provider	Same as community paramedic with additional diagnostic skills, attends non-emergency calls, falls of the elderly, minor medical conditions, capable of treat and release without transport	Same as PP with additional skills, can order X-rays and other diagnostic tests, has limited prescribing ability, able to treat and release or refer to alternative care pathway	Scope of practice is limited only by what is deemed appropriate and capable of the PA by the supervising physician
Regulation and Supervision	Division of Ambulance Service, supervised by the ambulance service	Division of Ambulance Service, supervised by the ambulance service	Division of Ambulance Service, mainly supervised by the ambulance service, sometimes placed in clinics or work in GP surgeries under GP supervision	State registration or similar arrangement, meet national competency standard, supervised by physician, physician has legal liability, PA responsible for limiting their practice within set constraints

4.3 Summary and Recommendations

This report has shown that a deficit in healthcare access currently exists in Queensland, especially in rural and remote areas, and that this problem has been identified in a number of government health policy documents and other discussion papers in recent years. Various strategies have been implemented to address the problem of health worker shortages, and it is now recognised that expanding the roles of current health workers and exploring the creation of new health provider models should be considered. Recent events in Queensland Health reported in the media suggest that consideration of alternative healthcare models should proceed with some urgency.

Several expanded practice programs trialled and implemented overseas have been reviewed and the success of many of these has been demonstrated. The appropriateness of each of these options for implementation in Queensland will need to be determined, cognizant of challenges that will need to be dealt with and the specific community needs that are yet to be identified. The introduction of expanded scope programs and/or development of new healthcare models as part of a broader health reform strategy could make a significant contribution to addressing the problem of health worker shortages. Based on these findings the following recommendations are made.

Recommendation 1

The role of expanded practice programs for ambulance paramedics should be considered as a means of expanding their contribution to providing healthcare in the community, especially in rural and remote locations.

Recommendation 2

The development of paramedic expanded practice roles should be guided by the needs of the local community. Therefore, a needs assessment study and comprehensive review of current expanded practices should be carried out.

Recommendation 3

The ambulance service should immediately begin to explore options for training paramedics in expanded practice roles and work in close association with universities to develop appropriate training curriculum according to the findings from the needs assessment study.

Recommendation 4

Paramedic expanded scope training curriculum should be broad-based, designed with a core set of competencies and be flexible to take account of local community needs, and should change as the new role evolves and becomes more clearly defined over time.

Recommendation 5

New health provider roles such as the UK Emergency Care Practitioner and the USA Physician Assistant models should be considered for rural and remote, regional and urban areas.

Recommendation 6

The public needs to be educated about the nature of these new roles and made aware of how they could be used to improve public health care.

Recommendation 7

The involvement and support of the medical profession and allied health workers needs to be encouraged to facilitate the development of the new roles and to forge essential working relationships with them.

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Appendix A

Canada Community Paramedic Competencies

(Reproduced from the Nova Scotia Emergency Health Services Website)

<http://www.gov.ns.ca/health/ehs/sitemap.htm> [Accessed: 05 January 2006].

Table A1. Canada Community Paramedic competencies.

A	Competencies
1	Congestive Heart Failure Assessment
2	Fall Prevention and Home Safety Assessment
3	Venipuncture / Phlebotomies
4	Urinalysis by Dip Stick
5	Suture / Staple Removal
6	Wound Care
7	Immunizations (ICPs, ACPs, and CCPs only)
8	Medication Compliance
9	Diabetes Assessment
10	Glucose Checks
11	Blood Pressure Checks
12	Antibiotic Administration (ICPs, ACPs, and CCPs only)
13	B12 Injections
14	Helmet Safety Fitting
15	Car Seat Installation
16	CPR and First Aid Instructor Status
17	Health Promotion Activities (regarding prevention)

Appendix B

Skills of the Paramedic Practitioner

(Taken from Mason et al. 2003)

Practical Skills

- Local anaesthetic techniques.
- Wound care and suturing techniques.
- Principles of dressings and splintage.

Special Skills

- Joint examination.
- Neurological, cardiovascular, and respiratory system examination.
- ENT examination.
- Radiograph requests.
- Protocol lead dispensing: simple analgesia, antibiotics, tetanus toxoid.
- Mobility and social needs assessment.
- Referral processes: GP, district nurse, community social services.

Appendix C

Vision for ECP Formal Scope of Service

Emergency Care Practitioner Pilot Study in Warwickshire (Adams et al. 2005).

- Patient Assessment.
- Making direct patient referrals.
- Providing protocol-based treatment.
- Prescribing and administering antibiotics, tetanus injection and simple analgesics.
- Wound closure and dressing.
- Catheterisation.
- Ordering X-rays and certain other diagnostic tests.
- Taking blood samples.
- Providing an alternative response vehicle and re-prioritisation of the second responding vehicle for category 'A' calls.

Appendix D

Core skills taught by various UK ECP training courses and the percentage of courses teaching those skills

(Reproduced from Mason et al., 2004)

Table D1. Core ECP skills.

Core Skill	%
Cardiovascular System Assessment	91.7
Respiratory System Assessment	91.7
Gastrointestinal System Assessment	81.8
Neurological System Assessment	91.7
Urological System Assessment	91.7
Musculoskeletal System Assessment	100
Dermatological System Assessment	83.3
ENT System Assessment	91.7
Ophthalmology System Assessment	100
Consultation / communication skills	100
Assessment of minor injuries	100
Assessment of the paediatric patient	100
Assessment of the elderly patient	91.7
Assessment of the acutely disturbed patient	100
Pharmacology	83.3
Legal and ethical issues	100
Evidence-based practice	100
Research and audit	83.3
Paramedic skills: scene safety	75.0
Paramedic skills: recognition of death	75.0
Paramedic skills: advanced life support	75.0
Paramedic skills: driving course D1 level	66.7
Other:	41.7
Optional Skill	%
Pre-hospital trauma life support	85.7
Advanced Driving D2 level	71.4
Gynaecological system assessment	57.1
Paediatric ALS	85.7
Other:	35.7

Appendix E

Avoided Hospital Attendances and Admissions

South Yorkshire Ambulance Service/Sheffield ECP Scheme: A Review (Cooper, 2005).

Table E1. Number and percentages of avoided hospital attendances and admissions as a result of ECP interventions.

Month (2005)	Total	Avoided Attendances		Avoided Admissions	
		Expected	Actual	Expected	Actual
April	457	456 (50%)	239 (52%)	100 (11%)	46 (10%)
May	562	456 (50%)	239 (43%)	100 (11%)	46 (8%)
June	530	456 (50%)	256 (48%)	100 (11%)	46 (9%)
July	535	456 (50%)	268 (50%)	100 (11%)	46 (9%)
August	547	456 (50%)	336 (61%)	100 (11%)	48 (9%)
September	618	456 (50%)	299 (48%)	100 (11%)	58 (9%)
October	600	456 (50%)	355 (59%)	100 (11%)	85 (14%)

Appendix F

A National Evaluation of the clinical cost effectiveness of Emergency Care Practitioners

(From Mason et al. 2005)

Table F1. Estimated cost differences for ECPs and Paramedics.

	ECP	Paramedic
ECP / paramedic costs	£106	£248
ED at disposal	£13	£83
Hospitalisation	£138	£84
Consumables	Not measured	Not measured
Pharmaceuticals and tests (including X-rays)	£2	£17
Outpatients, MIU and A&E in follow up	£40	£66
Other NHS and social services follow up	£60	£154
Total costs	£360	£651

Appendix G

ECP Job Description

London ECP Scheme (Halter & Marlow, 2005)

London Ambulance Services NHS Trust Job Description

Job Title: Emergency Care Practitioner (Trainee)

Location: London – various locations

Salary:

Grade: Emergency Care Practitioner (Trainee)

Reporting To: ECP Project Coordinator

Key Relationships: ECP Clinical Lead
LAS Medical Director
LAS Ambulance Operations Managers
LAS Station Officers
Primary Care Trust Clinical Leads

About The Project:

The way in which a response to emergency and unscheduled care requests in London is provided is about to fundamentally change.

A new role and profession, Emergency Care Practitioner (ECP), is being developed to respond to this challenge.

This will be a community role developed in collaboration with local health and social care services. Practitioners will provide a rapid response to non-life-threatening/emergency 999 calls, a selected range of GP out-of-hours calls and other requests from local health and social care professionals and communities – i.e. schools and residential homes. ECPs will deliver high-quality assessments, diagnoses, treatment and referral or discharge for people in crisis situations. This project will require effective team working across traditional organisational and professional boundaries in order to deliver care appropriate to need.

About The Role:

The role requires individuals who can competently assess patients, diagnose, treat and refer or discharge patients with undifferentiated and undiagnosed injury and illness. You must be someone who is careful, who listens to patients, their families and friends and who can work collaboratively to develop effective packages of care for people in crisis situations.

Emergency Care Practitioners will work in teams – managed by an ECP Coordinator - allocated to specific Primary Care Trusts. While there will be bases in GP surgeries, Walk-in Centres or Minor Injuries Units, and some rotation through these settings, staff will normally be working alone as single responders in the community.

Trainees will receive a modular package of education at St. George's Hospital Medical School (Tooting) leading to an Emergency Care Practitioner Diploma. The eight units include physical assessment, clinical decision making, minor injuries, minor illnesses, paediatric assessment, chronic conditions and applied pharmacology. Advanced driving skills and an induction programme in preparation for working in pre-hospital care will be available to applicants requiring these skills.

The role is probationary for the first year. At the end of this period and subject to successful completion of the educational modules, an evaluation of effectiveness whilst working in teams, evidence of patient focus and passing a selection process the positions will become permanent.

Main Tasks and Responsibilities

Key Tasks and Responsibilities

- 1) Assess patients, diagnose, treat and refer or discharge patients with undifferentiated and undiagnosed injury and illness. Prescribing within Patient Group Directions, ECP Clinical Guidelines and scope of professional practice.
- 2) To respond immediately to emergency and unscheduled care requests as directed by Central Ambulance Control and provide a first point of contact, including undertaking single assessments.
- 3) Empower patients through clearly explaining the results of any assessments and tests and their consequent options. To follow patients' wishes as long as safe and appropriate and to provide empathy and reassurance when required to patients and their families and friends.
- 4) Decide whether to treat, discharge, transport, organise transport or refer patients to other services, working within ECP Clinical Guidelines.
- 5) Provide support and information to other roles and services about the ECP contribution to patient independence and care.
- 6) Train and develop, teach and mentor, educate and inform – trainee ECPs, London Ambulance Service (LAS) staff, other health and care professionals, students, patients and their family members/friends where appropriate.

- 7) Manage caseloads where appropriate, deliver on personal ECP project portfolio responsibilities and deliver clinical leadership on cases referred to the service.
- 8) Develop and apply the best available research evidence and evaluative and reflective thinking in all practices.
- 9) Take an active part in primary care trust and LAS-based planning and policy development as related to the role.
- 10) Play an increasing role in the promotion of health and well-being and preventative health care strategies.
- 11) Continue to extend and improve collaboration with other professions and services, including shared working practices and tools.
- 12) Work collaboratively to extend ECP clinical and practitioner roles across professional and organisational boundaries.

Patient Care

- 13) To maintain and maximise patient confidentiality, dignity and privacy.
- 14) To undertake any required lifting and carrying in line with LAS policy and statutory guidelines.
- 15) To adhere to ECP Clinical Guidelines and Patient Group Directives, JRCALC Clinical Guidelines and directives from the LAS Medical Director or nominated appointees.
- 16) To develop and maintain an individual and up-to-date 'Clinical Progress' portfolio to underpin, define and provide evidence on your own professional scope of practice.
- 17) To adhere to ECP Clinical Guidelines and the limits of your professional scope of practice as detailed and evidenced in your personal 'Clinical Progress' folder and by your professional body.

Vehicles and Equipment

- 18) To drive and operate LAS vehicles and equipment, in accordance with service policy and standards and Road Traffic law.

Professional Registration

- 19) To maintain UK registration as a Paramedic, Nursing or Allied Health Professional. To undertake any statutory training, re-certification, and patient care training as required by both the LAS and the discrete professional registration bodies. Emergency Medical Technicians will need to undertake the relevant education and formally register as Paramedics to proceed beyond the probationary period.
- 20) To adhere to the appropriate HPC, Nursing or other Professional Codes of Conduct and associated training in the performance of all duties.

General

- 21) To comply with LAS and ECP service policy, procedure and any statutory requirements.
- 22) To undertake the specified ECP education package and arrange and undertake related professional placements and mentoring.
- 23) To undertake any additional training in advanced driving, induction into pre-hospital working, paramedic skill sets and other areas as required by the LAS.
- 24) To undertake project-related tasks as directed by ECP Coordinators and the ECP Project Manager.
- 25) To adopt a flexible attitude in meeting work commitments which will involve travelling to other locations on occasion and covering rotas on a 24-hour shift pattern when required.
- 26) To maintain a professional attitude and public image at all times.
- 27) To supervise and mentor any trainee Emergency Care Practitioners, Paramedics, Emergency Care Technicians, and other staff as requested.
- 28) To comply with the equal opportunities policies and procedures.
- 29) To develop and maintain an up to date Personal Development Plan.
- 30) To participate in relevant service evaluation and improvement processes.
- 31) To participate in personal and group clinical appraisal, review and governance processes as required by LAS.
- 32) To comply with health and safety policy, including use of personal protective equipment where supplied.

Key Relationships

Externally: NHS and other partners including: PCT Clinical Leads, GPs and practice staff, Walk-in Centre, Minor Injury Unit and Intermediate Care staff, A&E staff, Community and Mental Health Services, NHS Direct, Social Care services (i.e. Care Managers, Occupational Therapists, Home Care and Agency care workers) and the voluntary sector.

Internally: ECP Team Leaders, Area Operational Managers, Station and Training officers, LAS Team Leaders, Relevant CAC managers and control and dispatch staff, ECP Project Manager and the LAS Medical Director, Sector Clinical Advisors and ECP Clinical Lead.

London Ambulance Services NHS Trust Person Specification

Job Title: Emergency Care Practitioner-Trainee

Location: London – various locations

Listed below are the key requirements needed to undertake this job. Candidates will be assessed against these criteria:

- 1) Either
 - A State Registered Paramedic for at least two years,
 - or a Registered Nurse for at least two years with a primary care or A&E background,
 - or an Emergency Medical Technician with at least four years post-Millar's A&E experience who will be required to register as a Paramedic as part of the course,
 - or Physiotherapists or Occupational Therapists with two years post-registration experience with A&E or primary care/community services background.
- 2) Strong listening and communication skills.
- 3) Ability to empathise with and reassure patients and their family members/friends in crisis situations.
- 4) Strong team worker with a collaborative style.
- 5) Able to take and follow instructions.
- 6) Ability to assess, minimise and manage risks and to defuse stressful situations and aggressive patients – and to have well-developed personal stress management techniques.
- 7) High levels of current clinical knowledge.
- 8) Confident to work independently and make own judgments.
- 9) Willing and able to learn and use paramedic skill set.
- 10) Professional attitude and appearance.
- 11) Literate.
- 12) Committed to personal and professional development.
- 13) Personal insight.
- 14) Ability to pass Higher Education modules.

- 15) Understanding and commitment to equal opportunities.
- 16) Commitment to clinical review and evidence-based practice.
- 17) Good self management, i.e. self-starter, good time management and able to deliver against set objectives.
- 18) Persuasive advocacy skills – able to develop packages of care for patients.
- 19) Reliable and conscientious.
- 20) Physically fit and able to lift/push/pull patients as required.
- 21) Commitment to maintaining patient confidentiality, empowerment and right to self-determination.
- 22) Successful experience of developing something in team setting.
- 23) Ability to mentor/train junior staff and a commitment to sharing knowledge and skills.
- 24) Willing to engage in ECP evaluation/research if required.
- 25) Hold a current manual driving Licence, valid in the UK and covering vehicles of categories C1 and D1, with no more than 3 points. Licences will be assessed based on conviction codes to determine acceptability.
- 26) Able to pass a medical assessment to the standard required for PCV licence.
- 27) No serious criminal convictions (Minor convictions, especially those that occurred some time ago, may be considered on an individual basis. Any conviction involving theft or violence will not be acceptable.)

Appendix H

ECP Usage Statistics

Provided by Dave Taylor ECP/HEI Development Manager
Mersey Regional Ambulance Service

Statistics were collected on national ECP usage for the period 21/12/03 to 20/11/05.

Table H1. Age of patients attended by ECPs.

Number of Patients	Age Range	Percentage
10708	17-64	45%
9088	65+	38%
2469	0-11	10%
1643	12-16	7%
Total 23908		

Table H2. Patient Access to ECPs.

Number of Patients	Method of Access	Percentage
9960	999 Call	41%
8091	Treatment Centre	33%
3305	Home Visit	14%
1709	GP Surgery	7%
705	A&E	3%
435	Other Means	2%
184	Ambulance Referral	1%
Total 24389		

Of 3273 home visits where time of visit was recorded 2341 (72%) occurred out of hours and 932 (28%) occurred in hours.

Table H3. Ambulance Use/Transport of 12915 Patients seen by ECPs.

Number of Patients	Transport	Percentage
5155	No Ambulance/Transport	40%
4038	Emergency Ambulance Stood Down	31%
2393	Transport by Emergency Ambulance	19%
1180	Ambulance Downgraded Including IC/Urgent/STV	9%
149	ECP Transport	1%
Total 12915		

Table H4. Patient Outcomes: of 23854 cases where patient disposal pathways were recorded.

Number of Patients	Outcome	Percentage
14291	See and Treat	60%
4306	Referral to other Health Provider	18%
2997	A&E	13%
1445	See and Treat with Assistance	6%
730	Other Outcome	3%
85	Other Clinician in Attendance	<1%
Total 23854		

Table H5. A breakdown of 4873 recorded cases successfully referred to an appropriate care pathway.

Number of Patients	Referral Pathway	Percentage
1220	GP visit	25%
572	A&E	12%
554	Medical Admissions	11%
498	Other Care Pathway	10%
494	GP Surgery Appointment	10%
178	Fracture Clinic	4%
177	Other Specialty	4%
166	District Nurse	3%
165	Surgical Admissions	3%
131	Paediatrics	3%
119	Treatment Centre	2%
90	Practice Nurse	2%
88	X-Ray	2%
86	Orthopaedics	2%
53	Social Services	1%
52	Elderly Care Team	1%
47	Falls Team	1%
42	ECP Follow-Up	1%
35	Gynaecology	1%
33	Nurse Specialist	1%
31	Physiotherapy	1%
25	Home Assessment Team	1%
17	Mental Health Team	<1%
Total 4873		

Appendix I

Physician Assistants by Specialty Area

(From the American Academy of Physician Assistants Website)

[http:// www.aapa.org/research/05disorders.pdf](http://www.aapa.org/research/05disorders.pdf) [Accessed: 24 November 2005].

Estimated Number of Clinically Practicing PAs by Specialty as of January 1, 2006.

All Specialties	58 665
Family Practice	18 477
General Internal Medicine	4 991
Internal Medicine: Cardiology	2 070
Other IM Subspecialty	3 990
Obstetrics/gynecology	1 476
Emergency Medicine	5 393
General Paediatrics	1 718
Pediatric Specialty	922
General Surgery	1 293
Cardiovascular Surgery	1 659
Orthopedic Surgery	4 489
Other Surgical Subspecialty	4 088
Occupational Medicine	1 575
Other	6 524

Appendix J

Visits to PAs in 2005 for Specific Disorders

(From the American Academy of Physician Assistants Website)

[http:// www.aapa.org/research/05disorders.pdf](http://www.aapa.org/research/05disorders.pdf) [Accessed 24 November 2005].

Table J1. Estimated Number of Visits to PAs in 2005 for Specific Disorders.

AIDS/HIV-related	1 772 887
Allergic disorders	16 437 141
Alzheimer	3 515 331
Asthma	11 463 654
Cancer	7 389 304
Congestive heart failure	8 192 502
Contraception	6 807 229
COPD	9 787 469
Depression/anxiety	13 423 691
Dermatitis/skin disorders	13 926 910
Diabetes	15 964 304
Dyslipidemia	14 915 306
Gastrointestinal disorders and infections	13 847 898
Gynecological disorders and infections	9 774 231
Headache (including migraine)	10 862 213
Health maintenance	15 128 649
Hormone replacement therapy	3 924 858
Hypertension	18 188 421
Pediatric immunizations/vaccinations	5 087 608
Adult immunizations/vaccinations	4 077 841
Osteoarthritis	13 451 281
Osteoporosis	7 761 781
Other musculoskeletal disorders/injuries	22 279 822
Overactive bladder	4 321 152
Pain management	16 435 054
Respiratory/ENT infections	20 318 295
Sleep disorders	5 840 308
Urinary infections	10 765 021

Appendix K

Glossary of Terms and Abbreviations

A&E	Accident and Emergency
ACAP	Australian Council of Ambulance Professionals
ECP	Emergency Care Practitioner
ECG	Electrocardiograph
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
GP	General Practitioner
ICP	Intensive Care Paramedic
MO	Medical Officer
MODP	Multiple Option Decision Point
MIU	Minor Injury Unit (United Kingdom)
NHS	National Health Service (United Kingdom)
NP	Nurse Practitioner
PA	Physician Assistant
PCT	Primary Care Trust (United Kingdom)
PP	Paramedic Practitioner
QAS	Queensland Ambulance Service



Queensland Government
Department of **Emergency Services**