



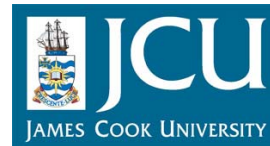
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RESEARCH INSTITUTE**

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**THE EXPANDING ROLE OF THE RURAL GENERALIST
IN AUSTRALIA – A SYSTEMATIC REVIEW**

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PREFACE

This is the final report of a systematic review conducted as part of the Australian Primary Health Care Research Institute (APHCRI) Stream Six funding. The aim of Stream Six is to investigate issues of rural and remote health, Indigenous Australian's health and mental health workforce issues. The emerging multidisciplinary care approach to primary healthcare, including the practice nurse role is also a focus of the research projects.

This particular review is looking at the decline and subsequent emergent role of the "rural generalist" in the context of Australian rural and remote health.

This project seeks to identify the dimensions of generalism and generalist practice that:

- enhance accountability of health systems (state and commonwealth),
- represent value in improving access across the primary healthcare system, and
- provide for sustainable health service delivery in rural and remote communities.

The project will address the education and training, accreditation, service delivery and policy implications required to enhance the growth in the development of the future generalist workforce. This will be achieved through addressing the following research questions:

1. What are the factors within general practice and primary healthcare reforms which act as barriers to the essential dimensions of generalism within primary healthcare teams?
2. What are the education and training, accreditation, and policy implications of the growth and development of the generalist workforce?
3. To what extent does a generalist approach address service delivery issues in relation to accessibility, accountability, sustainability, community needs and safety within rural and remote and Indigenous Australia?
4. What health concerns are most effectively addressed by generalist approaches? How can this be accommodated within primary healthcare teams in rural and remote and Indigenous Australia?

THE RESEARCH TEAM

This review was undertaken by the Australian College of Rural and Remote Medicine (ACRRM) with its team of Associate Professor Dennis Pashen, James Cook University's Mt Isa Centre for Rural and Remote Health and Vice President ACRRM, Associate Professor Richard Murray, Dean School of Medicine, James Cook University and Censor, ACRRM, Associate Professor Bruce Chater, Director Rural Clinical School, University of Queensland and Immediate Past President, ACRRM, Ms Victoria Sheedy, Manager of Education and Training, ACRRM, Mr Col White, (Data and Research Manager), Health Workforce Queensland, Mr Lars Eriksson, (Liaison Librarian), University of Queensland Library, Dr Stephanie De La Rue, (Research Manager), Mt Isa Centre for Rural and Remote Health, Miss Marnie Du Rietz, Education Resource Officer, ACRRM.

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ACRONYM LIST

ACCHSs	Aboriginal Community Controlled Health Services
ACEM	Australasian College For Emergency Medicine
ALSO	Advanced Life Support in Obstetrics
ALARM	Advances in Labour and Risk Management
ATLS	Advanced Trauma Life Support
ACRRM	Australian College of Rural and Remote Medicine
AGDoHA	Australian Government Department of Health and Ageing
AGPT	Australian General Practice Training
AHS	Area Health Service
AIHW	Australian Institute of Health and Welfare
AMA	Australian Medical Association
AMC	Australian Medical Council
AMWAC	Australian Medical Workforce Advisory Committee
ARIA	Accessibility/Remoteness Index of Australia
ARRWAG	Australian Rural and Remote Workforce Agencies Group (Now Rural Health Workforce Australia)
ASGC	Australian Standard Geographical Classification
ATSI	Aboriginal and Torres Strait Islander
Avg	Average
CDAMS	Committee of Deans of Australian Medical Schools
CDH andFS	Commonwealth Department of Health and Family Services
CMO	Career Medical Officers
COAG	Council of Australian Governments
CPD	Continuing Professional Development
CPMEC	Confederation of Post Graduate Medical Education Councils
CRISP	Computer Retrieval of Information on Scientific Projects
DoHA	Department of Health and Ageing
DMOs	District Medical Officer Services
DRANZCOG	Diploma of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists
EDs	Emergency Departments
EURIPA	European Rural and Isolated Practitioners Association
FACEM	Fellow of the Australasian College For Emergency Medicine
FACRRM	Fellow of the Australian College of Rural and Remote Medicine
FRACGP	Fellow of the Royal Australian College of General Practitioners
FTE	Full-Time Equivalent
FWE	Full-Time Workload Equivalent
GP-VMOs	General Practitioners – Visiting Medical Officers
GPET	General Practice Education and Training
GPs	General Practitioners
GPSR	General Practice Strategy Review Group
HIC	Health Insurance Commission
HWQ	Health Workforce Queensland
IM/IT	Information Management/Information Technology
JCU	James Cook University
LSCS	Lower Segment Caesarean Section
MBS	Medical Benefits Scheme
MBS	Medicare Benefits Schedule
MDS	Minimum Data Set
MICRRH	Mt Isa Centre for Rural and Remote Health
MOU	Memorandum of Understanding
MSOAP	Medical Specialist Outreach Assistance Program
MSRB	Medical Schedule Review Boards

MTRP	Medical Training Review Panel
NACCHO	National Aboriginal Community Controlled Health Organisations
NSW	New South Wales
O andG	Obstetrics and Gynaecology
OECD	Organisation for Economic Co-operation and Development
OMPs	Other Medical Practitioners
OTDs	Overseas Trained Doctors
PGMEC	Postgraduate Medical Education Committee
PGPPP	Prevocational General Practice Placements Program
PGY1	Post Graduate Year 1
PGY2	Post Graduate Year 2
PGY3	Post Graduate Year 3
PIP	Practice Incentive Payment
PMC	Postgraduate Medical Council
PMCO	Postgraduate Medical Education Council of Queensland
QAS	Queensland Ambulance Service
QH	Queensland Health (QH)
RACGP	Royal Australian College of General Practitioners
RACGP (NRF)	Royal Australian College of General Practitioners National Rural Faculty
RHAC	Rural Health Advisory Council
RCSs	Rural Clinical Schools
RFDS	Royal Flying Doctor Service
RG	Rural Generalist
RIP	Rural Incentives Program
RIPERN	Rural and Isolated Practice Endorsed Registered Nurses
RMGs	Rural Medical Generalists' (RMGs)
RPL	Recognition of Prior Learning
RRAPP	Rural and Remote Area Placement Program
RRMA	Rural, Remote and Metropolitan Areas
RRMEO	Rural and Remote Medical Education Online
RuDASA	Rural Doctors' Association of Southern Africa
RUSC	Rural Undergraduate Support and Coordination
RVS	Relative Value Study
RVTS	Remote Vocational Training Scheme
RWAs	Rural Workforce Agencies
SARRAH	Services for Australian Rural and Remote Allied Health
SIP	Service Incentive Payment
SMO	Senior Medical Officer
SOGC	Society of Obstetricians and Gynaecologists of Canada
SWPE	Standardised Whole Patient Equivalent
UDRHs	University Departments of Rural Health
UK	United Kingdom
Uni WA	University of Western Australian
UQ	University of Queensland
USA	United States of America
VMO	Visiting Medical Officer
VRGPs	Vocationally Registered General Practitioners
WHO	World Health Organization
WONCA	World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians or World Organization of Family Doctors
WWII	World War 2
WWAMI	Washington, Wyoming, Alaska, Montana, and Idaho

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BROAD OVERVIEW

The place of generalism in medical practice is a key policy issue in Australia and internationally. In developed countries, healthcare systems are becoming increasingly stretched as a result of ageing populations, the rise of chronic health conditions, increasing sophistication and cost of care and generational trends to shorter professional working hours. Many Aboriginal People and Torres Strait Islanders, as well as populations of under-developed nations, face the double jeopardy of the classical diseases of poverty, social inequity and poor environment, now combined with rising levels of so-called diseases of affluence [1]. On a background of increasing medical subspecialisation and length of training pathways, policy-makers have to consider how to ration investment of social resources, both in terms of people and funds [2]. The question of an appropriate balance between generalism and specialisation in medicine is therefore an important consideration in health workforce planning.

USE OF THE TERM GENERALIST

The terms generalist, generalist care and generalism have been used throughout the document for consistency. The scope of this role has been defined in the discussion. This is contrasted with specialist, specialist care and specialisation. The corollary of generalism is the ability of this scope of practice to deal with undifferentiated problems, be the first point of access and provide a holistic approach. The terms primary care, general practice and family practice and hospitalist are also used widely in this context with particular connotations with respect to level of care, site of care or style of care. Much of the literature reflects these specific terms. During the paper when the evidence for generalism is discussed in one of these contexts, the particular contextual term is used.

WORKFORCE: GENERALISM VS. SPECIALISATION

From the late 1930s and 1940s, the growth of specialty colleges within Australia has mirrored the international trend away from generalism and towards specialisation. During the 1950s this trend was encouraged by fundamental changes in the nature of medical practice such as the growth of technology and focus upon hospital-based services. To a greater or lesser extent this shift was supported by strategic decisions on behalf of workforce planners and professional colleges to move general practitioners (or family physicians) out of the hospital setting and into community-based practice. This trend continued throughout the 1950s and 1960s with a subsequent loss in status and morale in general practice [3, 4].

Inevitably health planners are looking towards generalism as the healthcare sector seeks to provide services in the context of inadequate numbers of doctors, growing and ageing populations, and increasing expectations regarding service accessibility. These gaps in services are particularly apparent in rural and remote areas which are typically at the sharp end of health system pressures and social determinants of health.

Interestingly this movement back to broad based and highly skilled generalist practice is being driven by both the general practice (family physicians) and specialist professions (e.g. the Canadian and American physicians and surgeons) who have decried the loss of generalism and the resulting lack of specialist skills in rural communities [5-9].

FILLING THE GENERALIST ROLE

It is in rural and remote areas that the impact of undersupply and maldistribution of medical workforce is first manifest. It is also in these areas that solutions, obstacles and policy innovations are most readily apparent: necessity has always been the mother of invention in the bush. The realities of providing services has meant that the decline in procedural skills in the general practice workforce has not been as rapid in rural communities.

Historically, generalism in Australia sat within the realm of general practice, which, at one time, was a broadly based, 'one-stop-shop' discipline which serviced the needs of rural communities. This included community-based primary medical care, internal medicine, paediatrics, women's health and preventative care, but also contained a large procedural component of first-contact emergency medicine, surgery, anaesthetics, and obstetrics as necessitated by geographical isolation [10].

Prior to the emergence of differential rebates and the growth of the federal funding through Medibank and Medicare it was not uncommon for general surgeons, obstetricians and physicians in rural areas to serve as community primary carers in partnership, or in some cases competition, with general practitioners. Similarly, rural general practitioners often worked as anaesthetists, colleagues and assistants to rural specialists. Thus, rural communities produced medical alliances and a scope of practice that was unique to the environment and driven by the community need and the skills, competencies and interests of their practitioners rather than their collegiate or professional affiliations.

While the health sector landscape has changed both nationally and internationally, the needs of rural and remote communities for basic care have not. As a result, the practice profile of general practitioners and family physicians in rural and remote settings increasingly differs from those working in urban areas. Necessity still demands that primary care practitioners in rural areas of Australia, Canada and the United States of America (USA) perform a greater range of procedures, provide more medically complex care, undertake work in the hospital as well as the community setting, and are able to practice obstetrics [11-15]. The features of rural and remote practice are summarised in Box 1.1 below.

Box 1.1: Features of generalism in the rural and remote setting

Environment/Context

- Non-metropolitan location
- Practice functionally distant from major tertiary centres of healthcare without ready access to the full range of specialist medical supports.

Clinical Practice

- Predominantly un-referred patient population including children, men and women
- Comprehensive range of clinical services in health assessment, illness prevention, health promotion, management of episodic illness or injury, primary mental healthcare, maternal and reproductive care and in the early diagnosis and ongoing management of chronic illnesses including education and support for self-care
- After-hours and emergency care
- Typically provides extended care in primary services as well as in one or more of the following: obstetrics, anaesthetics, surgery, emergency care or population health.

Services Provided

- Responsibility for providing continuing care
- Service coordination and referral to specialist and other services
- Participation in teams to afford community access to the range of needed care
- Ability to provide extended primary care (e.g. management and primary investigation of presenting conditions [fractures, ultrasound, X-Ray]) and hospital-based medical care without supervision by a specialist medical practitioner in the relevant discipline.

Sources: Compiled from: World Organization of Family Doctors (1991) [16]; Subcommittee on Primary Health Care of the Provincial Co-ordinating Committee on Community and Health Science Centre Relations [17]; College of Family Physicians (1996) [18]; Martin et al (2004) [19]; and Queensland Health (2006) [20].

In most cases, this role has been assumed by general practitioners (or family physicians) with specific procedural training. Other disciplines are also represented in the generalist workforce including Internal Medicine [21] and the 'hospitalist' [22] in the USA and more generally non-vocational medical practitioners and specialists with a primary care component of practice [23]. Trends in the scope of medical practice are shown diagrammatically Figure 1.1.

The vacating field of clinical generalism

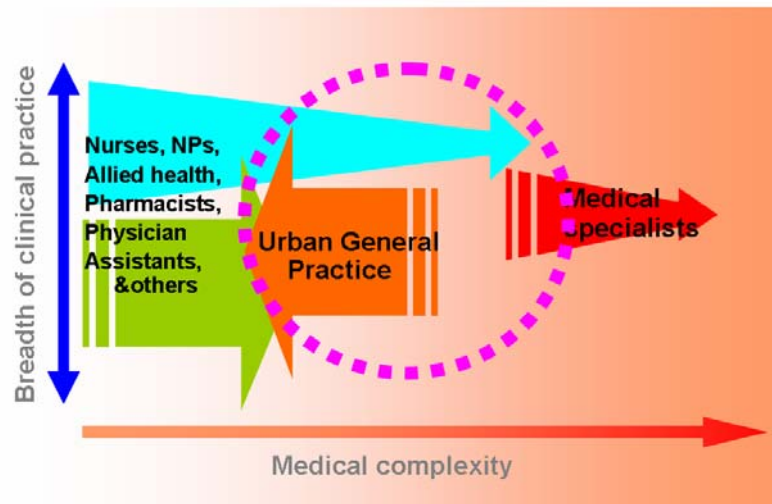


Figure 1.1 Trends in generalist medical practice

SCOPE OF PRACTICE

The scope of practice of rural generalists is largely driven by the needs of the community. A number of factors impact on this, including: population size; community demographics; profile of high-risk groups; burden of disease; morbidity and mortality; access to specialist care; geographical isolation; and socioeconomic status. Certain healthcare necessities that must be maintained outside of the reach of specialist services, including basic emergency, anaesthetic, surgical and especially birthing services [4, 8, 24-35].

Safety and quality considerations have been given as justification for reduction in procedural practice in rural and remote hospitals [36]. This was to some extent driven by ‘turf wars’ from the specialty colleges who perceived a gradual lowering of standards in general practice as a growing concern [37]. Regulators have tended to address this by identifying demonstrable clinical competencies which are linked to clinical privileging for practitioners that allow non-specialists to perform specified ‘specialist tasks’ in a healthcare facility. While this approach does enhance the capability of practitioners to perform various procedures, it also creates a need for additional training opportunities which are frequently informal, individualistic and idiosyncratic [38].

Until recently, clinical privileging could only be supported either through brief periods of specialist training at Senior Medical Officer or Registrar levels or, where available, Diploma level training such as the Diploma of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (DRANZCOG). More recently, the Australian College of Rural and Remote Medicine (ACRRM) ‘Rural Medical Generalist’ (RMG) pathway provides rural practitioners with a structure for attaining the additional procedural competencies required to satisfy the defined RMG scope of practice [26].

While effort has been made to address the safety and associated education requirements of rural generalists there are other structural barriers to the delivery of generalist services including the growth of ‘fly-in, fly-out’ specialist services, improved retrieval services, role delineation of hospitals, rising medical indemnity costs and litigious populations. Interestingly, many of these concerns run contrary to evidence that generalists can deliver a high standard of practice that can also be safe, acceptable, and cost effective, especially if appropriately supported [39-43].

DEFINITIONS OF GENERALISM IN RURAL AND REMOTE MEDICINE

The drift away from and towards generalism involving such a wide range of disciplines makes a single definition of this role in clinical medical practice illusive. Instead, as demonstrated below, definitions frequently depend on the nationality, geography, background and discipline of the writer(s).

INTERNATIONAL PERSPECTIVES

Despite the obvious impact of the loss of generalist skills on rural and remote communities, most International definitions of generalism do not specifically differentiate between the urban and rural or remote environments. The International contexts closest to rural and remote generalism within Australia are:

1. Canada: *"The true medical generalist might be defined as a practitioner not only with broad primary skills but one who is able to carry out any number of defined tasks within the specialty fields. These generalists, who provide thrombolysis, trauma care, anaesthesia, appendectomies, caesarean sections, and other 'secondary' skills, sustain rural health care as we know it"* [44]
2. Europe: *"The primary care-secondary care interface is dynamic and changing, as are the boundaries between general practitioners and primary care physicians or hospital specialists. There is considerable overlapping of roles of general practitioners giving specialized care and specialists providing general practice services, the so called 'hidden' primary care"* [23]
3. World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA): *"The physician who is primarily responsible for providing comprehensive health care to every individual seeking medical care, and arranging for other health personnel to provide services when necessary. The general practitioner/family physician functions as a generalist who accepts everyone seeking care whereas other health providers limit access to their services on the basis of age, sex and/or diagnosis"* [16]

AUSTRALIAN GOVERNMENTS

The Australian Government and State Governments have also been slow to adopt a specific definition for rural and remote generalism. The Australian Government simply defines a Primary Care Practitioner as:

"a practitioner engaged in general practice or the primary care of patients. This category includes practitioners recognised by Medicare as Vocationally Registered General Practitioners (VRGPs), a Fellow of the Royal Australian College of General Practitioners (RACGP), a Fellow of the Australian College of Rural and Remote Medicine (as of late 2006), Australian General Practice Training and Remote Vocational Training Scheme Trainees, and Other Medical Practitioners (OMPs) whose main practice is unreferred patient attendance" [25].

Queensland Health (QH) has recently adopted a specific model of generalist in rural areas - the first State Health Department to do so. The 'Rural Generalist' model is to be an integral part of state funded health services to rural and remote communities. QH defines a Rural Generalist in terms of the context in which they are accredited to practice, namely:

1. "Hospital-based and community-based primary medical practice
2. Hospital-based secondary medical practice
 - a. In at least one specialist medical discipline (usually but not necessarily limited to obstetrics, anaesthetics and surgery)
 - b. Without supervision by a specialist medical practitioner in the relevant discipline
3. And possibly, hospital and community-based public health practice – particularly in remote and Indigenous communities" [20].

AUSTRALIAN PROFESSIONAL BODIES

Recognition of the scope of skills required by rural and remote health professionals has been forthcoming, to some degree, from all Australian professional bodies. For example the Australian Medical Association (AMA) recognises that:

"Cross-disciplinary investigation is implicit to the practice of Rural and Remote Medicine. It presumes an interdependent model of medical service that combines high level competency in primary, secondary and sometimes even tertiary medical care and forms a distinct scope and method of practice" [44].

Similarly the RACGP National Rural Faculty (NRF) has also acknowledged the unique nature of rural and remote practice which is driven much more by the needs of the individual community which in turn results in a broader scope of practice:

"rural general practitioners are more likely to be able to provide in-hospital care as well as private consulting room care, to provide after hours services, to engage in public health roles expected of them by discrete communities in which there are few doctors to choose from, to engage in clinical procedures, to engage in emergency care, to encounter a higher burden of complex or chronic health presentations, and to encounter larger proportions of Aboriginal and Torres Strait Islander patients in their overall patient load" [24].

ACRRM recognises that rural and remote practitioner's experience "increased individual responsibility owing to relative professional isolation, geographic isolation, limited resources and special cultural and sociological factors". As a result, ACRRM has argued the need for the development of specialists in rural and remote medicine, termed 'Rural Medical Generalists' (RMGs) with the expectation that these professionals are:

"able to adapt and build their skills in response to the health needs of a diverse range of rural and remote community settings and the degree of isolation from other health services and resources. The defining characteristics of the specialty are the specific content, context and consequent complexity of the discipline" [26].

REVIEWING RURAL GENERALISM

The purpose of this report is to identify the current and potential dimensions of generalist practice in rural and remote Australia. To achieve this a review of national and international literature addressing the following key concerns was undertaken:

- Workforce Supply – To what extent do rural generalists assist in addressing existing workforce shortages particularly in terms of rural specialists? Is this arrangement sustainable?
- Education and Training – Are there structures in place within the medical education sector to support rural generalists to develop and maintain procedural skills?
- Funding Arrangements – Can the current funding structures effectively accommodate rural generalists?
- Quality and Safety in Rural Healthcare – How safe is rural healthcare and how will the adoption of generalism impact upon this?
- Service Models, Legislation and Clinical Privileging – To what extent can existing legislation and service provision models accommodate the rural generalist? What will be the impact of generalism on team-based care? What legislative frameworks are required to facilitate rural generalism?

The outcomes of this review will be presented within the context of the Australian healthcare system and will identify both organisational and governmental policy considerations required to support the expansion of generalism within rural and remote health.

It is important to note that while general practitioners and family physicians have always been an important part of the health workforce, this review found comparatively little published material regarding medical generalism as a discipline. This is most likely due to the gradual demise of this role since the 1940s during which time it would have attracted little interest from either researchers or workforce planners.

SUMMARY

The literature suggests that there are common features of roles that characterise generalists in rural and remote practice, or 'Rural Generalists'. While a universal definition of the role has been illusive we can apply the following general description:

A generalist in rural and remote medicine (or rural generalist) is a medical practitioner with broad primary care skills who provides extended care including aspects of secondary and tertiary care in a variety of settings.

It is also possible to identify key components of the rural generalist scope of practice which includes office based primary healthcare, facility and mobile-based emergency care. It may also include a broad range of procedural and non-procedural care normally delivered in urban environments by specialists.

However, while the decline in generalist specialists in rural and remote medicine has led to the expression of significant concerns by rural surgeons, physicians, paediatricians and obstetricians, there seems to have been little activity to redress this shift. In order to facilitate the expansion of the role of generalism within the rural workforce the following issues must be examined further:

- Workforce Supply
- Education and Training
- Funding
- Safety and Quality
- Service Provision Models,
- Legislation
- Clinical Privileging

Strategies for addressing these barriers will be the subject of the remainder of this report.

METHODOLOGY

LITERATURE SEARCHES

Literature was sought from both traditional databases and grey literature sources. The databases searched included: Medline, CINAHL, EMBASE, the Cochrane Library, INFORMIT databases. Grey literature was obtained from a number of sources including local databases and non-indexed material from websites and relevant organisations. Further material was also added from references found in retrieved articles.

The search terms used were developed through discussion of the topic and after a number of iterations the final searches were performed. The searches focussed on generalism and rural practice, with each being modified for various database requirements. Please see Appendix A for further information relating to Methodology.

INCLUSION CRITERIA

The inclusion criteria for the literature maintained that the article had to relate to the rural setting, be about generalist practice, and be relevant to Australian conditions. There also were no date or literature type limits.

Articles were excluded if they were only about specialist physicians, set in developing countries, or were not applicable to generalism and the rural setting.

The references were collated in an endnote library and the results were scrutinised in two stages. The first was a review of the references by two members of the review team; the second stage was a review of the articles by the two other members of the review team. If at either stage a decision could not be made the merits of the article was discussed and final decision made.

RESULTS

The results of the literature searches of the databases, grey literature and the snowballing process provided over 5000 references. The first review of the results provided 1,533 references. By the second review this was reduced to 403 results. The final number included in the review was 225 references. Each of the references were assigned an area of relevance to the review and were organised by the type of literature they represented. Due to the nature of the questions the majority of the literature identified for the review consisted of comparative studies, descriptive literature and reports.

Table 2.1: Included literature results according to theme and study type

Study Type	Generalism	Workforce	Education	Funding	Quality	Service Models	Totals
Systematic review	0	0	0	0	0	1	1
RCT	0	0	0	0	0	0	0
Research ¹	13	0	6	5	31	5	60
Qualitative Studies	8	0	4	1	10	2	25
Editorial/expert Opinion	6	2	12	4	12	2	38
Reports	6	15	4	5	4	2	36
Supporting Documentation ²	10	9	17	12	11	6	65
Totals	43	26	43	27	68	18	225

1 Includes: reviews, comparative studies and research articles

2 Includes: statistics and data, conference papers, government documents, books, position statements and submission papers.

WORKFORCE SUPPLY

The international health workforce shortage has forced governments to implement a range of strategies to ensure the viability of essential healthcare services, particularly in rural and remote communities where recruitment and retention of health professionals is most problematic. Specialist services are particularly scarce in rural areas and generalist rural practitioners have typically supported the delivery of specialist care - either through an extension of their own practice or by assisting other specialists. This chapter investigates the role of the generalist in delivering primary and secondary care and supporting specialist service delivery.

OVERALL MEDICAL WORKFORCE

Data compiled by the Australian Institute of Health and Welfare (AIHW) in its 2004 Medical labour force series [45] indicate that there were 53,966 medical practitioners working in Australia in 2004. As indicated in Table 3.1 below, around 40% of these professionals were primary care physicians (mainly general practitioners) while 35% were medical specialists, with the remainder split between specialists-in-training and hospital-based non-specialists. The total number of general practitioners reported by AIHW in 2004 is similar to that reported for 2002 by Australian Medical Workforce Advisory Committee (AMWAC). AMWAC went on to report that of the approximately 22,000 general practitioners (GPs) in Australia 70% of this workforce is located in major cities [46].

Table 3.1: Practitioner type, number and percent – Australia 2004

Practitioner type	Number	Percent
Primary care physicians	22,011	40.8
Specialists	19,043	35.3
Specialists-in-training	6,710	12.4
Hospital non-specialists	6,202	11.5
Total Clinicians	53,966	100.0

Source: Australian Institute of Health and Welfare (2006) [45]

A breakdown of primary care medical practitioners in Australia by state, number, gender and average ages is detailed in Table 3.2.

Table 3.2: Primary care practitioners, selected features, states and territories 2004

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number	7,757	5,744	3,508	1,936	1,809	649	437	171	22,011
% Male	65.0	63.6	62.5	63.7	68.8	57.4	53.2	55.9	63.5
% Female	35.0	36.4	37.5	36.3	36.2	42.6	46.8	44.1	36.5
Average Age	49.5	48.3	48.6	49.8	48.2	49.8	49.7	45.6	49.0
Male Avg Age	51.9	50.8	51.0	52.9	50.4	52.4	52.5	49.0	51.4
Female Avg Age	42.5	43.8	44.7	44.4	44.2	46.3	46.5	41.4	44.6

Source: Australian Institute of Health and Welfare (2006) (adapted from Table 14)[45]

In exploring changes between 2000 and 2004, the AIHW notes that although there was an increase in practitioner supply overall, this did not translate into an increase in supply in non-metropolitan areas. In addition, unlike overall supply, the number of primary care practitioners decreased from 102 to 98 full-time equivalent (FTE) per 100,000 population between 2000 and 2004 [45]. As illustrated in Figure 3.1 below much of this decrease occurred in remote and very remote areas.

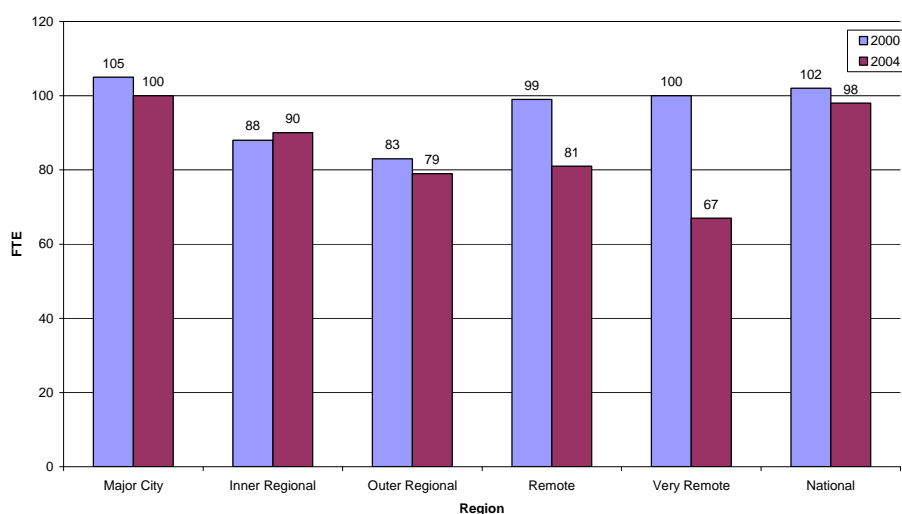


Figure 3.1 Comparison of primary care practitioner supply across regions between 2000 and 2004 (FTE per 100,000 population)

Compiled from Australian Institute of Health and Welfare (2006) [45].

THE PUBLIC HOSPITAL SYSTEM

In its 2004 review of the public hospital workforce, AMWAC estimated the total size of the workforce to be 22,694 [47] the makeup of which is described in Table 3.3 below. Of those listed as ‘staff’ medical practitioners, 656 were Career Medical Officers (CMO), 4221 were staff specialists and 1710 were employed as GPs and GP-VMOs. Of the general practitioners and GP-VMOs, 47% were working in RRMA 4 to RRMA 7 locations.

Table 3.3: Practitioner type, number and percent – Australian Public Hospital Workforce, 2004

Practitioner type	Number	Percent
Visiting Medical Officer (VMO)	6,840	30.1
VMO General Practitioners	1,399	6.2
‘Staff’ Medical practitioners ¹	14,455	63.7
Total Clinicians	22,694	100.0

¹ Including all those doctors under salaried employment by public hospitals from interns to staff specialists

Source: AMWAC 2004 The Public Hospital Medical Workforce in Australia [47].

In exploring differences between rural and urban hospitals, the AMWAC report [47] identified four main issues affecting workforce numbers and service provision:

- Recruitment and Retention: AMWAC suggested that rural and regional hospitals have much more difficulty recruiting and retaining medical staff than their urban counterparts. This was seen as being due to a number of factors unique to the setting, including a smaller number of doctors willing to work in rural areas, higher workloads and fewer staff to cover them, less access to specialised services, and specific skill requirements for some areas such as procedural skills or experience in Indigenous health
- Reliance on Overseas Trained Doctors (OTDs): This was generally much higher in non-urban areas. The report suggested that OTDs who did locate in rural areas often required support services and sometimes did not adjust well to the needs and expectations of a rural community. Recruiting and supporting OTDs was also seen as expensive and time consuming
- Training: Rural hospitals generally did not have the same resources and time available for training as urban hospitals. The demands of service provision frequently took precedence over the need for staff training along with a shortage of qualified senior staff to provide training. Lack of training opportunities also adversely affected rural hospital's chances of attracting staff while allowing time off for training was more difficult due to the difficulty in arranging locums.
- Quality and safety issues, especially working hours: There was a significant difference between urban and rural locations in this area with lack of staffing options and smaller facilities overall meant it was much more difficult for rural hospitals to enforce safe working hours for junior doctors. The shortage of specialists also resulted in longer working hours. The need to transfer patient's long distances for some procedures and rely on VMOs from a capital city were also seen as issues that were specific to rural and remote hospitals.

RURAL AND REMOTE SPECIALISTS

A major impetus for exploring rural generalism in Australia is the scarcity of specialist medical services in a majority of rural and remote communities. The geographic distribution of specialist services is shown in Figure 3.2 below.

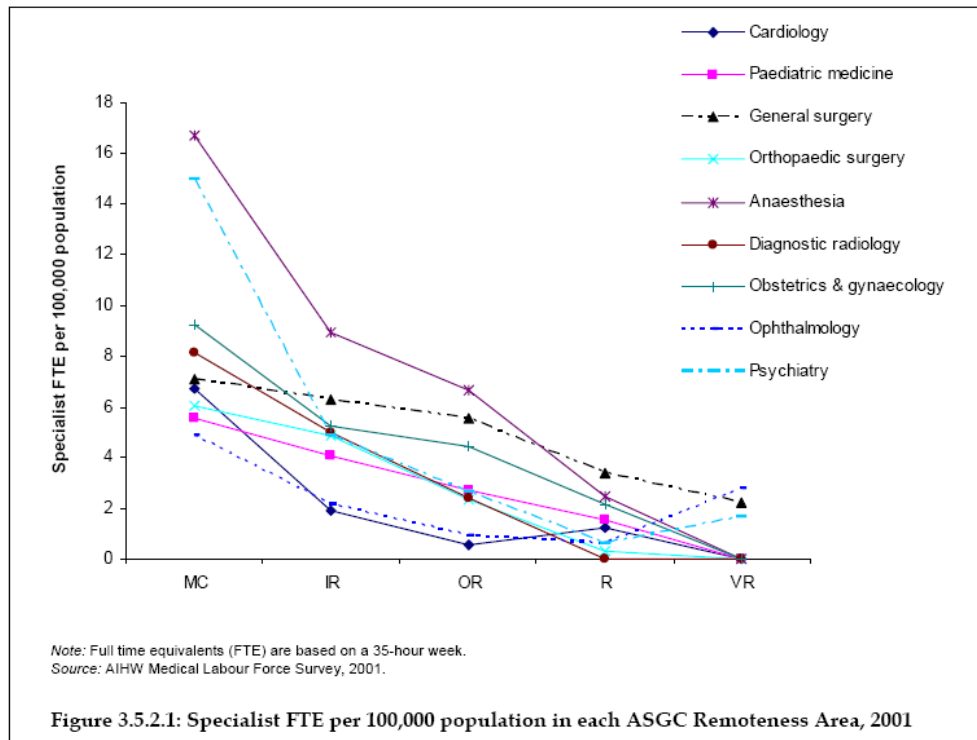


Figure 3.2 Specialist FTE per 100,000 population in each ASGC remoteness area, 2001

Source: Australian Institute of Health and Welfare (2005) [48].

In a 2004 discussion paper, the National Rural Health Policy Sub-Committee established by the Australian Health Ministers Conference, noted the poorer health status of Australians living in rural and remote locations, and particularly of Indigenous persons, had been well documented [49]. The committee also concluded that while recent Medicare data on utilisation of specialist services is not readily available, 1995-1996 data indicated that people living in 'large rural centres' use 20% less specialist services than those living in capital cities. For 'other rural centres', there were 50% fewer specialist services and 65% less for people living in 'remote centres'. The report also notes that rural residents need to travel long distances to access specialist services.

As a consequence of population catchments being unable to sustain resident specialist services, the sub-committee suggests that the situation for rural specialist service provision is such that:

- The poorer relative health status in rural areas is compounded by poorer access to specialist services - both resident and visiting
- There is a reasonable expectation of rural communities and capacity with the public health system for access to the common specialties to be resident within the regional centres, while receiving visiting services or travelling further to access higher level specialist treatment
- Australian supply for the common medical specialties and filling of training posts in rural centres does not reflect demand
- General practitioners with procedural skills represent an important element in ensuring access to procedural services, particularly for obstetrics and anaesthetics. The general practitioners in these roles require specialist support and maintenance of their skills to provide an effective service

These findings are consistent with the 2005 AMWAC report on surgical workforce which concluded that AMWAC and other researchers have noted a consistent maldistribution of specialists and in particular, an undersupply in rural and remote locations. AMWAC further indicated that consumers in rural and remote locations are less likely to seek a specialist opinion or return for follow-up because of the barriers (social, economic, cultural and geographic) associated with accessing specialist services [50]. In addition several AMWAC specialist workforce reports have particularly noted the role of GPs with procedural skills in ensuring ongoing access to specialist services in rural and remote areas [50-53].

OBSTETRICS AND GYNAECOLOGY

In its most recent report in relation to the Obstetrics and Gynaecology (O andG) workforce, AMWAC [51] indicates that there were 1,160 practising specialists in obstetrics in Australia in 2003 of which the majority worked in metropolitan locations (see Table 3.4 below).

Table 3.4: Obstetrics and Gynaecology Workforce distribution, 2003

Location ¹	Number	Percent
Metropolitan	977	84.2
Large Rural Centres	96	8.3
Small Rural and Remote ²	86	7.4
Total Clinicians	1,160	100.0

¹ Location is defined using the Rural, Remote and Metropolitan Areas system (RRMA) classification system

² Small rural and remote covers classification RRMA 4 to RRMA 7. Twenty-three percent of Australia's population live within these areas [54].

Source: Australian Medical Workforce Advisory Committee (2004) [51].

The AMWAC report acknowledges that there are a number of other health professionals working in maternity care – mostly midwives and general practitioners (GPs), who are not counted in the figures provided above. It also notes that GPs providing intrapartum care are more likely to be working in regional or rural areas. Although the GP O andG workforce was not the focus of the study, AMWAC acknowledged that GPs are an important component of the provision of maternity services in rural and remote regions and that a small reduction in the provision of these services by GPs can be critical in a given region. This may be due to the individual being the sole provider or, more often, the dynamics of attrition: the loss of one provider increases the on-call demands of the remaining ones who subsequently opt out of practice.

ANAESTHETICS

In its 2001 report on the specialist anaesthesia workforce in Australia, AMWAC estimated that the size of this workforce was 2,238 [52] of which 85.2 percent were located in metropolitan areas (see Table 3.5 below). This is consistent with the need for a population base between 5,000 and 50,000 (depending on the remoteness of the location) to support a viable resident specialist service in anaesthetics.

Table 3.5: Anaesthetics Workforce distribution, 2001

Location ¹	Number	Percent
Metropolitan	1907	85.2
Large Rural Centres	221	9.9
Small Rural and Remote ²	110	4.9
Total Clinicians	2,238	100.0

1 Location is defined using the Rural, Remote and Metropolitan Areas system (RRMA) classification system.

2 Small rural and remote covers classification RRMA 4 to RRMA 7. Twenty-three percent of Australia's population live within these areas [54].

Source: Australian Medical Workforce Advisory Committee (2001) [52].

The report further notes that numbers include specialist anaesthetists only, and do not include non-specialist anaesthetists including GPs in rural and remote regions who may be the main providers of anaesthesia services. Based on 1999-2000 Medicare data, the report suggests that there were 208 non-specialists whose billings were predominantly for Medicare anaesthesia items. These estimates are considerably less than data compiled for the Australian Rural and Remote Workforce Agencies Group (ARRWAG) which in 2005 estimated that the number of GPs providing general anaesthesia services was approximately 463 [55].

SURGICAL

In its 2005 review of the surgical workforce in Australia, AMWAC estimated there were approximately 3,340 surgeons in Australia in 2004 [50]. See Table 3.6 below for their distribution across locations as defined using the Australian Standard Geographical Classification (ASGC). In this case the use of the ASGC classification does tend to distort rural/urban comparisons, particularly in Queensland where large regional cities such as Mackay, Townsville and Cairns are classified as outer regional while many small and other rural centres under the RRMA system are classified as inner regional. See Appendix B for a guide as to the effect of the different classification systems.

Table 3.6: Surgical Workforce distribution, 2004

Location ¹	Number	Percent
Major Cities or Inner Regional	3076	92.1
Outer Regional or Remote	160	4.8
Location data unavailable	104	3.1
Total Clinicians	3,340	100.0

1 Location is defined using the Australian Standard Geographical Classification (ASGC) system.

Source: Australian Medical Workforce Advisory Committee (2005) [50].

EMERGENCY PHYSICIANS

In its 2003 review of the specialist emergency medicine workforce, the AMWAC Working Party [53] defined an emergency physician as:

“A qualified Fellow of the Australasian College For Emergency Medicine (ACEM) who is conducting emergency consultations, practising emergency medicine, medico legal consultations on emergency medicine or is in a full-time or part-time academic position relating to emergency medicine. It will include salaried positions and private practice. It does not include other practitioners who, for one reason or another, undertake emergency medicine work as part of their practice; nor does it include the training registrars who hold positions in hospitals or the service registrars who work in emergency medicine but are not recognised as being in training positions”.

The size of the ACEM workforce was estimated as 477 in 2002. As with the other specialties, the majority of these professionals practice in metropolitan centres. Table 3.7 below provides detailed distribution information.

Table 3.7: National ACEM fellows by public hospital role delineation¹, number and percentage, by location for 1996 and 2002

Hospital Role Delineation	1996 ²		2002	
	Number	%	Number	%
Major referral	108	54.2	236	49.5
Major referral – paediatric	9	4.5	19	3.9
Urban district	49	24.7	131	27.5
Major rural/Regional	33	16.6	91	19.1
Total Clinicians	199	100	477	100

¹ Based on the ACEM role delineation. Note that a small number of Fellows work part-time in more than one public hospital, therefore numbers may not match figures shown in other tables in this report.

² The 1996 figure for ‘urban district’ includes those reported under ‘other capital city’ in the 1997 AMWAC report (1997.1), and the 1996 figure reported under ‘Major Rural/Regional’ includes those reported under ‘other urban’ + ‘rural major’ in the 1997 AMWAC report (1997.1).

Sources: This data was extracted from the following reports: AMWAC (2003) [53] (1997) [56].

Again it should be noted that the geographic distribution data provided does not describe the entirety of emergency services available in rural and remote areas. Emergency services at smaller rural and remote communities are typically provided by a local GP, a GP employed by a hospital, or the Royal Flying Doctor Service (RFDS). It further notes that, as in the original 1997 AMWAC emergency medicine workforce report [56] it will remain important to encourage GPs to obtain, maintain and utilise their skills in emergency medicine to provide basic services to smaller rural and remote communities. Appropriate training and retraining opportunities together with suitable remuneration and indemnity arrangements appear to be barriers to GPs obtaining and using their emergency medicine skills.

INDIGENOUS AUSTRALIAN HEALTH WORKFORCE

Indigenous people are under-represented among the health professions. Indigenous Australian registered nurses comprise only 0.4% of the nursing workforce [57]. Indigenous doctor numbers, while small are growing (from 35 in 2000 [58] to around 90 in 2007 [59]). To achieve an equal share by population proportion, the following Indigenous professional requirements have been estimated: 928 more doctors, 2,570 nurses, 161 dentists, 275 pharmacists, 119 occupational therapists, 213 physiotherapists, 149 medical imaging professionals and 59 optometrists [60].

The number of Indigenous Australians entering health profession training remains low. This relates to factors that impact on educational disadvantage, including poverty, remoteness and negative schooling experiences. School retention to year 12 is only half that of non-Indigenous students [61] and only 60% of Indigenous students achieve year 7 national reading benchmarks [62].

There is evidence of more global shortages of health professionals working in Indigenous health. Aboriginal Community Controlled Health Services (ACCHSs) are a major primary health care infrastructure, providing over 1.4 million episodes of care for Indigenous clients in 2003-04 [63]. However, according to registration data, only 299 doctors were working in Aboriginal health services in 2004 (0.5% of the total number of doctors in primary care) [45]. Terms and conditions of service for health professionals in ACCHSs are reported to compare poorly with careers in hospitals or private practice [64].

National health workforce policy for Indigenous Australians has been endorsed by the Australian Health Ministers' Advisory Council (AHMAC) [65]. Key areas identified for action are to: increase the number of Indigenous health professionals; support Aboriginal Health Worker (AHW) roles; enhance training, recruitment, and retention of health staff working in Aboriginal primary health care; and to explore the contribution of other health workforce groups.

Similarly, the 2006 Productivity Commission review of health workforce supported an enhanced role for AHWs and increased Indigenous participation in health workforce - particularly through locally-based training, recognition of prior learning, training on-the-job and training wages [64].

Resourcing is a major challenge if health workforce for Indigenous communities is to be improved. The Australian Government spends less per capita on health care for Indigenous Australians (considering Medicare, pharmaceuticals and Indigenous-specific primary health care) and the growth in healthcare expenditure in the four year period to 2001 was actually higher for non-Indigenous Australians [66]. The estimated shortfall of primary health care expenditure for Indigenous Australians is an estimated \$400 million per annum [60].

RURAL AND REMOTE MEDICAL WORKFORCE

The sections above indicate the availability of a range of services to rural and remote areas. However, in most cases this data does not document the existing role of rural generalists with procedural skills in supplementing specialist service provision. Data reported annually by individual Rural Workforce Agencies (RWAs) in all states and the Northern Territory shows the contribution made by generalist practitioners in rural and remote areas. This data was current as at 30 November 2005 and is reproduced here with permission of Health Workforce Queensland and the NSW Rural Doctors Network [55].

DATA SOURCES AND LIMITATIONS

During the 2001-2004 triennium, as a part of their contractual agreement with the Australian Government Department of Health and Ageing (AGDoHA), Rural Workforce Agencies (RWAs) in all states and territory were required to collect and report a minimum, specified set of data in relation to the rural and remote general practice workforce in locations classified RRMA 4 through RRMA 7. Since 2001, the individual reports have been compiled nationally for ARR-WAG as a minimum data set (MDS) survey.

Data in relation to numbers of GPs, age, gender, procedural skills and length of stay in current location are largely derived from databases maintained by each RWA. Information on primary income source, models of service provision, hours of work and types of practice are mostly self-reported using standardised data definitions. While the MDS survey is a major component of the data reported, all RWAs also utilise additional resources to verify and validate data.

Despite this there are some differences between workforce numbers for RRMA 4 to 7 locations between those reported by AGDoHA and those enumerated by RWAs.

For example for the 2004-05 year, AGDoHA indicates a headcount of 5,438 practitioners [67] providing a full-time workload equivalent (FWE) of 3,361 [68]. This compares with the RWA estimates of 4,317 practitioners. In their explanatory notes, AGDoHA notes that:

1. Headcount figures should be used with caution as they overstate the number of active general practitioners and include doctors who worked for only part of the year, and many doctors who provide only a small number of services [69]
2. FWE is a measure of medical workforce supply that takes into account the differing working patterns of doctors and is calculated by dividing each doctor's Medicare billing by the average billing of full-time doctors for the year

Therefore, FWE is probably a more accurate measure of service provision and/or Medicare utilisation over a given time period.

In contrast RWA numbers reflect the more stable elements of the rural and remote medical workforce and do not include transient, short-term service providers (e.g. locums).

OVERALL WORKFORCE

At 30th November 2005, the number of medical practitioners practising in RRMA 4 to 7 locations was 4,317. Their distribution across various locations within each State and the Northern Territory is provided in Table 3.8 below. The figures provided in this Table for Queensland and Western Australia include non-specialist state salaried practitioners working in RRMA 4 to 7 locations while in all other States, hospital services are provided by local GPs on a VMO basis.

Table 3.8: Rural and Remote Practitioner numbers by State and RRMA

State	RRMA4	RRMA5	RRMA6	RRMA7	Total
NSW	522	639	0	37	1198
NT	0	2	61	26	89
QLD	350	454	98	91	993
SA	103	283	0	25	411
Tas	47	114	0	2	163
VIC	316	611	0	8	935
WA	150	177	122	79	528
Total	1,488	2,280	281	268	4,317

Source: National Minimum Data Set (2005) [55].

Breakdown of rural practitioners by age, gender and state and territories 2005 is provided in Table 3.9.

Table 3.9: Breakdown of rural practitioners by age, gender and state and territories 2005

	NSW	Vic	Qld	WA	SA	Tas	NT	Total
Number	1198	935	993	528	411	163	89	4317
% Male	71.7	68.7	68.4	72.0	73.7	66.3	58.4	70.0
% Female	28.3	31.3	31.6	28.0	26.3	33.7	41.6	30.0
Average Age	49.3	48.0	45.8	47.1	47.8	49.1	45.0	47.5
Male Avg Age	50.5	49.6	47.0	49.2	48.9	51.6	46.0	49.0
Female Avg Age	46.1	44.2	43.4	41.8	44.4	44.8	42.8	43.9

Source: National Minimum Data Set (2005) [55].

RURAL PROCEDURALISTS

The MDS survey further seeks to enumerate the number of rural and remote non-specialist practitioners providing procedural services in RRMA 4 to 7 locations. However, it should be noted that national data in relation to the provision of procedural services in rural and remote Australia could be incomplete due to non-respondents. Also, in many cases practitioners are capable of performing a number of procedures e.g., anaesthetics and obstetrics or obstetrics and surgery and as such, the number of known procedural practitioners indicated (N=929) is less than the total number of procedures documented (N=1,407) as shown in Table 3.10. Of the 929 procedural practitioners, 386 (41.5%) perform multiple procedures. A Venn diagram illustrating practitioners undertaking single or multiple procedures is displayed in Figure 3.3.

Table 3.10: Number of practitioners undertaking procedural work by type and RRMA

Procedure	RRMA4	RRMA5	RRMA6	RRMA7	National ¹
Anaesthetics General	114	280	34	35	463
Obstetrics Normal					
Delivery	167	382	57	55	661
Surgery Operative	74	172	22	15	283
Known Proceduralists**	237	543	75	74	929
Total Practitioners	1,488	2280	281	268	4,317

1 GPs practicing in RRMA 4 to 7.

2 GPs practicing in at least one procedural field.

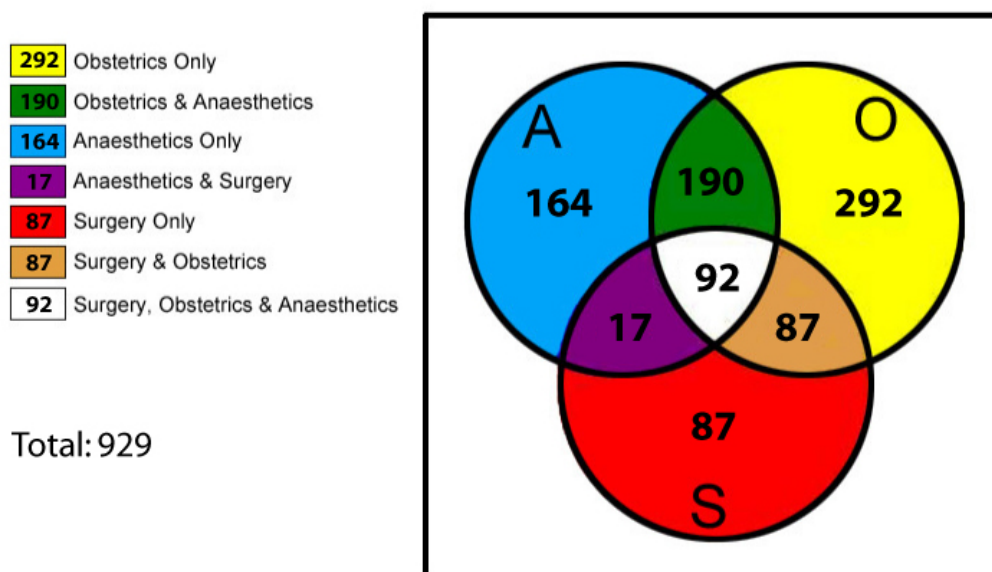


Figure 3.3: Venn diagram illustrating numbers undertaking single or multiple procedures (N=929)

Table 3.11 documents changes and trends in the rural and remote medical workforce over the period 2002 to 2005.

Table 3.11: Trends or changes November 2002 to November 2005

	2002	2003	2004	2005
Total practitioners	3,903	4,074	4,186	4,317
Percent female	28.4	29	29.7	30.0
Percent male	71.6	70.3	70.3	70.0
Average age (all)	46.7	46.4	47.1	47.5
Average age female	42.2	42.6	43.4	43.9
Average age male	47.7	48.0	48.6	49.0
Average GP clinical hours	37.7	37.1	36.5	36.2
Average total hours	46.7	46.7	43.7	44.1
Average length of stay in current practice (years)	8.3	9.2	8.3	8.1
Proceduralists General Anaesthetics	456	435	459	463
Proceduralists Obstetrics (Normal delivery)	706	638	657	661
Proceduralists Operative surgery	287	287	304	283
Known Proceduralists (practising in at least one procedural field)	935	902	933	929
Proportion of rural practitioners providing procedural services	24.0	22.1	22.3	21.5
Proportion of practitioners providing emergency care services	41.70	46.60	46.85	41.4
Proportion of practitioners providing Aboriginal health services	20.50	22.8	19.0	21.4

Source: National Minimum Data Set (2005) [55].

SUMMARY

The National Rural Health Policy Sub-Committee [49] has noted the comparatively poor health status of Australians living in rural and remote locations, and particularly that of Indigenous people. However, data suggest that specialist service provision is lacking or in short supply in a majority of rural and remote communities. Consequently, medical practitioners with procedural and/or advanced cognitive skills fulfil a substantial amount of the rural and remote workload that would be undertaken by specialists in metropolitan and regional locations. In turn, this has implications for education and training, continuing professional development and locum support.

Box 3.1: Workforce Policy Considerations

1. Issues affecting the supply of rural generalist workforce need to be addressed.
2. Rurally based medical school and vocational training needs to be encouraged.
3. Commonwealth funding of procedural training places – There are currently no incentives for registrars to undertake procedural training. While currently a state responsibility, the Commonwealth should take responsibility for funding procedural training places and ensure all training places, where possible, are located in regional and rural centres where rural proceduralists are most needed.
4. Indigenous communities suffer from the greatest health workforce shortages. Policy initiatives need to address the enhancement factors for the supply of Australian medical graduates into this area.
5. Indigenous health professionals are underrepresented in the Australian health system. Recruitment and retention strategies for Indigenous people need to be factored into any approach addressing workforce shortages.

EDUCATION AND TRAINING FOR GENERALISM

The previous chapter explored the geographic distribution of doctors and the role of rural generalists in providing a broad range of services, including specialist functions. This role can only be maintained if rural generalists maintain access to relevant education and training. This chapter will explore the role of the medical education and training sector in supporting rural generalism.

THE CRISIS AND THE OPPORTUNITY

In his opening address to the Medical Deans Australia and New Zealand conference 'Medical Education Towards 2010: Shared Visions and Common Goal', the Australian Government Chief Medical Officer, Professor John Horvath, noted that there "are many advantages to well trained generalists, as we all know, they have the skills to treat the bulk of our patients" [70].

The statement reflects a consensus that Australia needs to produce more generalists with a broad scope of practice in order to efficiently and effectively care for the needs of Australians now and in the future [64, 71]. In spite of this, generalism is declining, and scope of practice is diminishing [27, 72-75] with a particular impact on the availability of procedural services in rural communities [76].

While streamlining of education and training pathways within a discipline is possible, there is relatively little intercollegiate coordination and sharing of approaches between the 12 Australian colleges which cover more than 65 specialty training programs each which has its own standards for education, accreditation of training sites and certification of specialists. The Committee of Presidents of Medical Colleges (CPMC) [77] provides a forum for the colleges to consider healthcare and related education, standards and quality issues, but evidence of real sharing across colleges on training is limited [78].

Although the states and territories have agreed, as part of the Council of Australian Governments (COAG) Health Workforce initiative, to provide sufficient intern-level positions, this does not address the need for similar increases in resources for the subsequent postgraduate training years (PGY2 and PGY3). Urgent attention is required to ensure that availability of clinical teachers, teaching time, access to patients, and necessary infrastructure is sufficient for the increased trainee numbers throughout this critical period of training [79].

John Horvath [70] acknowledges the successes that universities have achieved but maintains that there is still a significant misalignment between education and service in relation to vocational training. The literature supports Horvath's observation that there is a lack of alignment between where education can be sought and where service delivery is provided [64].

However an analysis of major reforms in general practice training may provide useful insight into realigning education and service delivery. The Ministerial Review of General Practice Training [80] was announced by the Minister for Health, Dr Michael Wooldridge, in January 1997 and it ran in parallel with the Review of the General Practice Strategy. The impetus for the Review of General Practice Training came from the need to equip general practice to meet the needs of the Australian community into the 21st century.

The package of reforms involved significant changes to the structure and delivery of general practice vocational training. The new arrangements were expected to deliver on new skills identified by the review to deal with the needs of the Australian community into the 21st century (e.g. broader procedural skills; use of information technology; conceptual skills; communication and personal skills; leadership skills; management skills; medico-legal knowledge; the ability to use evidence-based and population approaches to health; and the need to better understand the broader social context of health service delivery and medical practice).

The findings of the consultation process also confirmed the need for change in the structures and delivery of general practice education. There was a perception that the current

arrangements required increased support for teaching in the community at the undergraduate level, increased experience of general practice during the hospital years, strengthened rural training, improved management and organisation of vocational training, and educational preparation about Indigenous health.

The Minister for Health announced a package of reforms that involved significant changes to the structure and delivery of general practice vocational training in June 2000. The major elements were:

- The establishment of a government owned company which would hold the funds for all post-graduate general practice vocational training
- The regionalisation of the management and delivery of training, with encouragement for a wider range of training providers to participate under a contestable GP training model

In response to this decision, General Practice Education and Training Limited (GPET) was founded in March 2001 to implement the regionalised and contestable GP vocational training program – to be known as the Australian General Practice Training Program (AGPTP). In January 2002, GP training under the regionalised training program began.

In addition to establishing GPET and a regionalised system of GP training, the reforms announced in 2000 also:

- Increased the quota of available first year training places from 400 to 450, effective from 2001
- Introduced a dedicated Rural Pathway (covering RRMA 4 to 7 locations)
- Introduced a mainly urban General Pathway
- Provided financial incentives for Rural Pathway registrars

Despite the review groups recommendation that ACRRM have a key role in the rural aspects of vocational training [60] and continuing education, this did not occur in any meaningful way until 2005 when the General Practice Education and Training (GPET) incorporated ACRRM standards for accreditation into training arrangements.

The Australian Medical Council (AMC) granted initial accreditation to the Australian College of Rural and Remote Medicine (ACRRM) on 1 February 2007. ACRRM is now formally recognised as a standards body and provider of specific training and professional development programs for the specialty of general practice. This accreditation was supported by COAG which recognised the potential for such recognition to improve training arrangements for rural generalist proceduralists.

The legislation and regulations which govern access to VR were modified and from April 2007, doctors who attain Fellowship of ACRRM through successful completion of ACRRM's AMC accredited training program, or who are assessed as having equivalent skills and experience to a graduate of ACRRM's accredited training program, will now be eligible for recognition.

In 2004 the Department of Health and Ageing contracted ACIL Tasman to undertake an evaluation of the new training arrangements.

Whilst the consultants stress that the program was still in transition stages they find that:

“It is our view that the most pressing matter for Government consideration is the introduction of a greater level of flexibility into, and more targeted incentives, for registrars training on the Rural Pathway of the Australian General Practice Training Program” [81].

The Productivity Commission recently made a detailed examination of national health workforce for the Australian Government, including the supply of, and demand for health professionals [64]. Like other reports [82-87], the Commission concluded that changes in the medical education system and associated regulatory arrangements might be an effective means of reversing the trend towards subspecialisation and the diminishing scope of generalist clinical practice.

System-wide measures proposed by the Commission and other observers [9, 79, 88, 89] to assist those living in rural and remote areas include:

- Changes to accreditation arrangements, would facilitate wider scopes of practice and greater emphasis on multidisciplinary care (eg: through the activities of the proposed Health Workforce Improvement Agency) thereby reinforcing and augmenting innovation that is already occurring in rural areas
- Incentives within the Medicare Benefits Schedule (MBS) for delegation of less complex tasks to suitably skilled, but more cost-effective, health workers and greater recognition within the registration framework of opportunities for credentialing of broader scopes of practice, would similarly support the reality of service delivery in remote locations

The opportunity exists for the rural and remote medical education sector to influence the redesign of education and training arrangements to promote generalism. This can be achieved by devising efficiencies and facilitating cross-accreditation arrangements (including streamlining curricula) which will allow new career pathways in rural medicine from medical school to vocational training to continuing professional development programs.

FOSTERING GENERALISM

Medical education arrangements impact on both recruitment to generalist practice and retention of generalist practitioners. This influence, negative and positive, occurs throughout the medical training continuum, from medical school, through intern, prevocational, vocational training and encompassing continuing professional development [9].

Key issues within the medical education sector that have been identified as enablers of generalism [9] include:

1. Medical student selection and admission policies [90]
2. Generalist curricula [70]
3. Generalist representation on medical school faculty [91]
4. Generalist involvement in learning experiences at teaching hospitals (urban and rural) and in the community [91]
5. Exposure to the broad scope of rural generalist experience at medical school, in prevocational and vocational levels [91]
6. Vertical integration of generalist training;
7. Multidisciplinary focus [70]
8. Need for generalists to have a greater teaching role
9. Recognition for medical generalism as a discipline [92]

MEDICAL SCHOOL INITIATIVES

Some changes in the way in which medical students are educated can be seen as positive drivers for generalism [71]. For example, there is now a greater emphasis on active learning, application of learning key principles and preparation for lifelong learning. Also, the setting where students are trained is changing. As well as learning clinical medicine in the traditional tertiary teaching hospital, medical students now spend time in general practices, rural generalist practice, community health settings, doctor's private rooms and private hospitals, and increasingly, small urban and rural hospitals [93]. The broader utilisation of training environments exposes students to a broader range of practice which includes generalist medicine.

Changes in patterns of career choice may flow from the increasingly diverse 'character' of Australian medical schools. Although there is little data currently available, it is possible that medical disciplines facing difficulties in recruitment may benefit from a different graduate profile [79]. The new regional medical schools specifically aim to produce graduates interested in general practice and rural medicine [94]. Australian Government initiatives such as the Rural Clinical School (RCS) and the Rural Undergraduate Support and Coordination (RUSC) programs support a rural training 'pipeline' - involving recruiting students from rural backgrounds,

delivering training in the rural areas and providing repeated rural exposures in curriculum. Regionally-based postgraduate training pathways in specialist disciplines are a notable missing piece of the rural workforce puzzle [95].

Walters and Worley [96] also argue that in Australia, innovation and expansion of medical and nursing education is increasingly being driven by workforce policy. They cite the establishment of Rural Clinical Schools (RCSs), Rural and Remote Area Placement Program (RRAPP), Prevocational General Practice Placements Program (PGPPP), and Australian General Practice Training (AGPT) as successful innovations driven by the workforce agenda, but they warn that recent research suggests that further significant expansion of postgraduate training opportunities for rural practice is necessary to achieve the workforce required to support the current practice models, let alone avoid continual crises by moving to more sustainable models of practice and workforce targets [96].

The potential gains for generalism as a result of these initiatives may be adversely impacted by the emerging 'bottlenecks' in prevocational training with more than doubling in numbers of doctors graduating from Australian medical schools over the next 5 years [97].

PREVOCATIONAL TRAINING

THE ROLE OF TEACHING HOSPITALS

The traditional model of medical education in Australia requires medical graduates to start their medical careers as Interns in accredited Postgraduate Medical Council (PMC) training posts. The majority of these posts are located in teaching hospitals and are deemed acceptable for basic training by a variety of professional colleges. During their time fulfilling these training requirements, Interns undertake 12 months of closely supervised work before being granted full medical registration. This is followed by their second postgraduate year (PGY2) during which junior doctors continue to work with increasing levels of responsibility in a broader range of healthcare settings, including accredited speciality terms. This approach is consistent with policy established through the Medical Training Review Panel (MTRP) that supports a generalist emphasis of training in the first two postgraduate years and is supported by the State and Commonwealth Governments and the AMA [91, 98].

However, trends in the delivery of healthcare has consequences for medical training that has traditionally been concentrated in metropolitan public teaching hospitals [99]. Public hospital inpatient care is now only a limited part of the healthcare spectrum. As a result, there is increasing competition for scarce clinical resources by trainees spanning the continuum from universities through the postgraduate years [78, 100]. The range of learning experiences in the teaching hospitals is reduced both by the focus on serious, less common patient presentations, and by decreasing inpatient numbers that have accompanied trends towards day-case interventions, subsidised private insurance and 'hospital in the home' programs [101].

Providing accredited postgraduate experience outside the tertiary hospital setting represents a partial solution to both increasing access to rural generalist experience and role models [78, 100, 101]. However, the lack of a defined curriculum outlining the prevocational learning objectives has been an impediment to effective and efficient vertical integration of medical education in Australia [102]. This problem was recently addressed by the Confederation of Postgraduate Medical Education Councils (CPMEC) which launched the Australian Framework for Junior Doctors [103].

This curriculum framework describes required learning in terms of performance elements and provides a useful starting point for practice-based training that relies on performance or competency-based assessment.

BEYOND THE TEACHING HOSPITAL

The MTRP recommended that “all postgraduate medical officer training include at least one rural term, be it in a hospital or general practice setting, and at least one community-based term, again either in general practice or a community health service” [98]. The development of training opportunities outside teaching hospitals has, until recently, been hindered by the absence of a defined curriculum for postgraduate training.

Despite this, programs such as the Prevocational General Practice Placements Program (PGPPP) have funded junior doctor terms outside the teaching hospitals. This has been an important opportunity for PGY1 - 3 doctors to gain exposure to generalist rural and remote practice. Evaluation of this program and other general practice intern rotations arrangements reveals that this is a valuable experience and impacts positively on generalist career intention [104, 105].

It is expected that the increased numbers of junior doctors combined with the launch of the Australian Curriculum Framework for Junior Doctors will drive the creation of new term rotations, with further expansion into generalist practice and community terms fulfilling the MTRP recommendation. In fact this has already been observed with the initiation of the Community Residencies Project by the Western Australian Department of Health [106]. Although it is worth noting that the extent of this expansion will be constrained by the current national shortage of generalist practitioners, and hence their capacity to supervise and train junior doctors in community settings including small rural hospitals [107].

VOCATIONAL TRAINING: GENERALIST CAREER PATHWAYS

In 2006 the Postgraduate Medical Education Council of Queensland (PMCO) collaborated with ACRRM and QH to accredit rural medicine terms for prevocational doctors in small rural generalist hospitals which had been accredited to ACRRM standards. Rotations through the rural terms meet requirements for recognised intern training hospitals and at PGY2 level are recognised by ACRRM as a component of an accredited vocational training program for Rural Medical Generalists [103].

The Queensland Health Department contracted ACRRM to develop a Rural Generalist (RG) curriculum, certification and web-based monitoring and tracking processes for RG candidates in PGY1 and 2. This curriculum maps to the National Junior Doctor Curriculum and ACRRM primary curricula requirements thereby fast-tracking progress towards ACRRM Fellowship and a vocational registration endpoint. This example of streamlined training towards a vocationally recognised endpoint has the potential to be extended to other States.

SUMMARY

A number of recent strategic national documents have identified significant workforce reforms required to meet the health service demands of the Australian community. There is a consensus that Australia needs a significant growth in “generalists” to meet these demands and none more than in rural and remote Australia.

Australia needs to produce more generalists with a broad scope of practice in order to efficiently and effectively care for the needs of Australians now and in the future [64, 71]. In spite of this, generalism is declining, and scope of practice is diminishing [27, 72-75] with a particular impact on the availability of procedural services in rural communities [76].

Enhancing factors for rural generalist practice:

1. Rural Health Strategies
 - Practice Incentives Program [108]
 - Rural Procedural Practice Grants [109]
2. Rural Medical Schools, Rural Clinical Schools, University Departments of Rural Health
 - Rural student recruitment policies
 - Student rural placement and exposure programs
 - A combined and vertically articulated medical education system that can:
 - a. support streaming of students into rural practice
 - b. produce *sufficient numbers* of doctors in the *optimum time* necessary to reach *requisite skills*, and
 - c. produce enough doctors who are willing to work in medical disciplines with high patient demand and in geographical areas with high patient need.
3. Rural pre-vocational programs to articulate a continuing exposure to rural practice [110]
4. Rural GP Registrar placement grants [111]
5. State Health Departments are increasingly seeing the training of proceduralist generalists as critical to their workforce, especially for hospital career structures in rural and provincial areas [20]
6. Lifestyle of rural communities seen by rural stream students as positive [112].

Diminishing factors:

1. Current professional training structures favour increasing sub-specialisation to the detriment of generalist training in procedural practice
2. Increasing technology in specialist practice
3. Differential rebates in Medicare schedule
4. Ageing of rural and remote proceduralists
5. Perceptions of rural practice as an unfavourable lifestyle.

Box 4.1 Education and Training Policy Considerations

1. Articulated “generalist” pathways in training within hospital and community sectors, provides a solution to the skills shortages in rural and remote communities.
2. Significant workforce enhancers are already in place and can be further enhanced by additional incentives and infrastructure within rural and remote communities.
3. Commonwealth and State divides in community and facility based training need to be synchronised to reduce barriers to more expedient training of generalists.
4. The opportunity exists for the rural and remote medical education sector to collaborate to influence the redesign of education and training arrangements to create efficiencies, facilitate cross accreditation arrangements, (including streamlining) in the promotion of generalism and new career pathways in rural medicine from medical school to CPD.
5. Training coalition of the following organisations recognising rural generalist training, Universities, Rural Clinical Schools, and PGMEC:
 - seek representation on the National Advisory Health Workforce Improvement Agency
 - contribute to the reform of education and training arrangements to facilitate contestability
 - ensure the recognition of rural and remote medicine by the new national accreditation agency
 - support education and training initiatives required for safe delegated practice arrangements
 - contribute to multidisciplinary training initiatives.
6. Better support for Universities committed to the training of generalists.
7. Policy funding for development and trialling of accelerated pathways to vocational recognition for rural medicine generalists (curricula, mapping, tracking and recording mechanisms, RPL processes, joint rural clinical placement accreditation arrangements).
8. Extend the Queensland rural generalist initiative to other states to facilitate shared accreditation and educational arrangements at prevocational levels.

FUNDING RURAL GENERALISM

The impact of healthcare funding arrangements on the provision of generalist medical services is an important consideration in workforce planning. Financing can impact on efficiency, effectiveness, access and equity of healthcare services. The financial value of generalist medicine needs to be considered in the context where a premium is often placed on the provision of specialist (and particularly procedural specialist) service.

EVIDENCE FOR COST EFFECTIVENESS OF A GENERALIST APPROACH

There is scant literature on the cost effectiveness of services provided by rural generalists. In the hospital sector, a Norwegian study reviewed the effectiveness of 15 GP hospitals [113] and compared them to alternative care based on municipality and hospital accounts and standard charges for patient transport. This study concluded that GP care in hospitals incurs the lowest costs to society. Similarly, a number of studies of obstetric services in generalist-staffed hospitals found that utilisation of these services resulted in better health outcomes leading ultimately to cost savings for the patients, communities and services [114-116].

Procedural practice is often seen as an additional burden on the budgets of financially pressed rural hospitals. However, previously unpublished data from the Rural Doctors Association of NSW, [117] suggests there may be substantial cost savings when comparable procedures are performed in district as opposed to base hospitals (see Table 5.1 below).

Table 5.1: Comparative costs: District (GP proceduralists) vs. Base Hospital (specialists) New South Wales (NSW) Area Health Service (AHS)

Procedure	Cost District hospital	Cost Base hospital	\$ saving	% saving
Colonoscopy	\$579	\$1,200	\$621	52%
General surgery	\$1,930	\$3,605	\$1,725	47%
Dental surgery	\$1,074	\$1,401	\$327	23%
Orthopaedics	\$2,643	\$3,013	\$370	12%
Elective LSCS	\$2,907	\$3,530	\$623	18%

More broadly, primary healthcare services have been shown to produce health and economic gains for populations. These economic benefits included less use of emergency departments and hospitals, better preventative care (including breast cancer detection), fewer tests and less medication use. This is graphically illustrated in Figure 5.1.

“More than two decades of accumulated evidence reveals that having a primary care-based health system matters. People and countries with adequate access to primary care realise a number of health and economic benefits” [118].

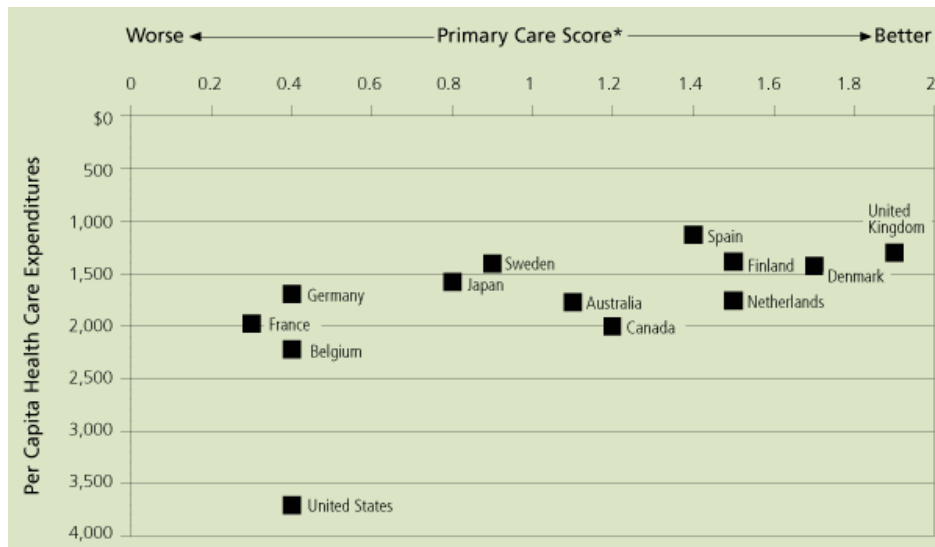


Figure 5.1 Per capita healthcare expenditures versus primary care score

Source: Adapted with permission from Starfield B. Policy relevant determinants of health: an international perspective. Health Policy 2002;60:201-21 [119].

RURAL FUNDING

A number of studies have shown that rural patients access considerably less of the Medicare budget annually than other Australians [120], despite poorer socio economic status and higher cost of living [48] (see Figure 5.2). It has been estimated that this represents a rural urban transfer of \$220M [121] (see Table 5.2).

This point is further illustrated by the findings of Mooney (2003) [122] who noted that:

“On average, Australians use Medicare-funded primary health care to the extent of just over \$530 per year. The people of Double Bay, a rich suburb in Sydney, use more than \$900. In the Kutjungka Region, in the Kimberley, the Aboriginal people are among the sickest in Australia. They use less than \$80 in Medicare primary health care funds per year, largely because of the non-availability of GPs”.

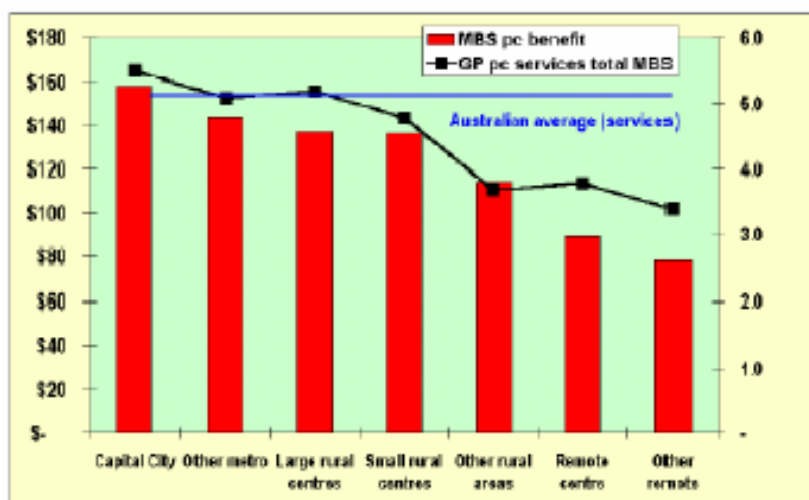


Figure 5.2 Services and MBS benefits per capita, by RRMA grouping, 2001-2002

Source: RDAI Budget Submission 2004-2005, 2003 [120].

Table 5.2: Medicare transfers from rural and remote to urban areas, 1999-2000

RRMA Group	Population (million)	HIC (Medicare) Benefits
1 Capital cities	12.25	1,547.2m
2 Other metropolitan	1.47	176.0m
Total urban	13.72	1,723.1m
% of total	72%	79%
Per capita		\$125.59
3-5 Rural/regional	4.87	436.5m
6-7 Remote	0.56	24.9m
Total rural and remote	5.43	461.3m
% of total	28%	21%
Per capita		\$84.91
Total	19.15	2,184.4m
Per capita		\$114.05
Rural-urban transfer		\$221.0m
Per capita		\$40.68

Source: RDAI Budget Submission 2004-2005, 2003 [120].

FUNDING GENERALISM

HISTORICAL PERSPECTIVE

Generalism in medical practice was common until immediately post World War 2 (WWII). Until this time, medical care was largely privately funded and generalists with special skills in the broad areas of medicine or surgery were commonplace.

In 1953, the Health Minister in the first Menzies government, Sir Earle Page introduced the Medical Benefits Scheme (MBS). It involved voluntary contributions to a registered private medical insurance fund. Patients then had the freedom to make their own choice of doctor and fund while Doctors were paid a fee-for-service by the appropriate Commonwealth benefit by the fund.

The so-called Page plan sought a national health system for hospital, medical, pharmaceutical and nursing home care through subsidies and regulation of the private health insurance funds. It set out to provide a safety net for the very needy, and to encourage and assist the majority of the population to look after themselves through voluntary contributions to regulated and subsidised health insurance [123].

PAYMENT SCHEDULES AND FUNDING DIFFERENTIALS

Funding differentials favouring specialisation existed under the Page plan but were institutionalised when the Gorton Government launched a new Health Benefits Scheme, under pressure about inequalities under the Page plan. While the premise of the Health Benefits Scheme was similar to that of the Page plan, significant changes were introduced, including the notion of the 'most common fee' (i.e. a median fee for each service which was used as a base for medical benefits from health insurance) and higher fees for specialist services. Not unexpectedly many GPs objected not only to the AMA Federal Council's approval of these changes, in particular the higher fees for specialists than for GPs which, it was felt, would lead to the de-skilling of GPs and their utilisation by patients merely as referral agents. GPs warned the AMA Federal Council that its stance threatened the unity of the AMA [123].

With subsequent iterations of these schemes including the introduction of Medibank and subsequently Medicare, the fee differentials remained both in consultation and procedural items.

The Relative Value Study (RVS) [124, 125] proposed to continue the differential between generalists and specialists with a further differential for consultant physicians. This payment schedule was based on the Medical Schedule Review Boards (MSRB) working assumptions that the "intensity" of referred attendances was 12% higher than for non-referred attendances [124, 125]. In addition there was a further factor applied to provide additional remuneration for consultant physician attendances.

Further, the MSRB decided that:

"the hourly rate for medical category was calculated so as to ensure that any income lost (either through lower training income or lower available practice hours) by a decision to pursue training rather than independent practice can be regained over the course of a career through a higher hourly rate".

This arrangement gave effective multipliers of between 18% and 30% for specialist practitioners [124, 125].

In developing this payment schedule the MSRB did not consider a range of issues including:

- The intensity of rural generalists consultation which, according to Humphreys [19] tend to involve more complex care which in turn has "*implications for the workload, responsibility, vocational satisfaction, need for professional education and support, and costs and remuneration of practice*"
- The extra training needed, nor the opportunity cost inherent in maintaining the skills required for generalist practice in rural Australia (this was later demonstrated by the Viable Models report prepared by the Rural Doctors Association of Australia [20]).
- The considerable cross-subsidisation by the office practice of the after hour and obstetric practice highlighted in that report which showed that the majority of income is derived from fees

The Relative Value Study (RVS) [124, 125] exercise was not adopted wholesale. Fee differentials remain, including those between scheduled fees for attendance and procedural items, the so called G/S (generalist/specialist) differential (see Table 5.3).

Table 5.3: Medicare Benefits Schedule – Schedule of Fees

Item/Consultation Type	GP	Specialist
Standard consultation	\$32.10	\$75.60
Standard consultation (Consultation Physician)	N/A	\$133.35
Vasectomy	\$170.75	\$203.15
Ultrasound examination	\$35.00	\$100.00

Source: Medicare Benefits Schedule [126].

During the same period that the RVS was underway, new non fee-for-service incentive payments were introduced such as the retention payment, Practice Incentive Payment (PIP) and Service Incentive Payment (SIP) [126, 127]. (See Table 5.4).

While these are available in a wide range of practice areas and covering many elements common to all general practices, they favour those that practice in rural areas or outer metropolitan areas. The specific measures that provided targeted support to the practice arrangements of rural generalists were the higher tier after hours payment, practice nurse payment and rural loading.

Table 5.4: Income sources of practices by RRMA Classification¹

Sources of income ²	All	3	4	5	6	7
Fees (%)	79	84	83	77	86	72
Hospital (%)	10	4	9	11	2	14
PIP and SIP (%)	11	12	8	11	12	14

¹ RRMA Classifications are as follows: 3 = Large Rural Centres, 4 = Small Rural Centres, 5 = Other Rural Centres, 6 = Remote Centres, and 7 = Other Remote Centres.

² Figures presented here indicated the % of total income.

Source: RDAA/Monash University Viable Models Project; CCH financial analysis of private general practices, 2003 [128].

REDRESSING THE BALANCE

In recent times, the balance in funding is moving toward equity for generalist practice. Enhanced Primary Care items including the recent introduction of care planning items have rewarded broader activity by generalists (see Appendix C for the details regarding PIP calculations). The incorporation of nurse item numbers have allowed practices to begin to harness the broader healthcare team.

In addition, specific financial incentives and funding allocations for procedural generalists have been introduced. The latter have rewarded both service provision and education in the areas of obstetrics, anaesthetics, surgery and emergency medicine. These programs have attracted about 1,000 doctors in the areas of obstetrics, anaesthetics, surgery in RRMA 3-7 locations [129] with an increasing number of doctors doing emergency medicine with the subsequent expansion of this program to RRMA 3-7 locations.

In the public hospital sector the differential between generalist and specialist has remained. The Accreditation of ACRRM by the Australian Medical Council (AMC) and its subsequent recognition in legislation has provided generalist doctors in hospitals with access to the vocational register and associated fees. The imminent introduction of the rural generalist pathway in Queensland will then see the salary differential discussed above removed for advanced skills doctors who meet State credentialing requirements for generalist practice [130].

PROVIDING THE INFRASTRUCTURE

HOSPITAL AND EMERGENCY FACILITIES

The rural hospital remains a vital part of rural health delivery and provides a key safety net for people living distant from tertiary care. For emergency cases, the local hospital (in conjunction with the GP) is the usual first treatment option [131]. Many locations also access emergency aerial retrieval services such as the Royal Flying Doctor Service (RFDS). The RFDS transfers 91 patients per day [132]. This is equivalent to 33,215 transfers (including inter-hospital transfers) per annum.

Downsizing rural hospitals does not typically improve the use of health resources. A US study examined the financial impact of downsizing in America in the 1980s concluded that "*hospitals [that downsized] did not perform any better financially than hospitals that did not*" [133]. This finding has been supported by similar experiences in Australia where downgrading of services has occurred [134] without resulting in any significant cost savings (Chater, B, personal communication with State Health officials, 2007). What is often not considered in a financial assessment of the impact of downsizing rural services is the resultant loss of procedural doctors from rural areas [85, 86] leading to a downward spiral in the provision of core services such as anaesthetics and obstetrics accompanied by a decline in the facilities capable of supporting these services (see Figure 5.3).

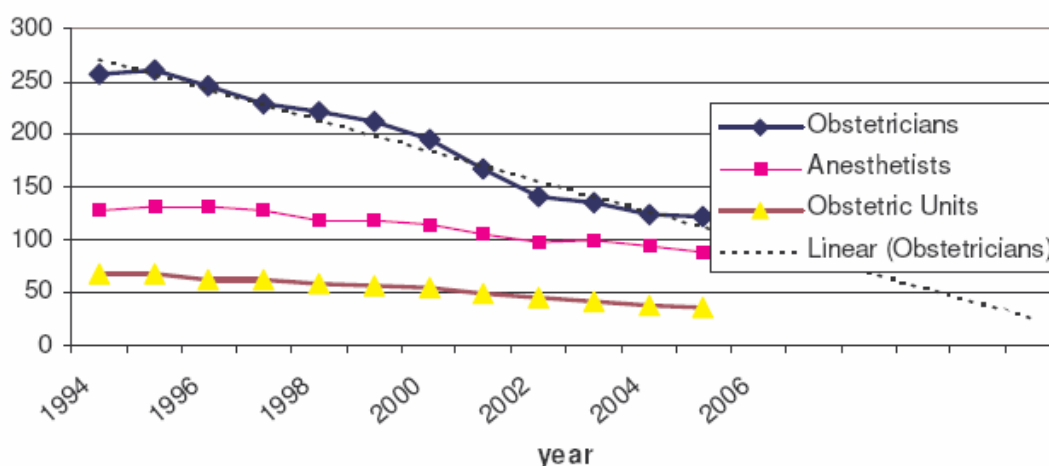


Figure 5.3 Decline in Obstetric and Anaesthetic Services in NSW

Source: Rural Doctors Association of New South Wales [135].

The Australian Medical Association (AMA) in its submission [136] to the so called "Blame Game" [137] Senate inquiry, proposed that a broader 'public interest test' should be applied when governments are looking at closing country hospitals. The test should consider:

- Impact on the maintenance of skills of the local medical workforce;
- Impact on the health needs of the local community;
- Social and employment impacts on the local community; and
- Availability and proximity of alternative resources [137, 138].

The committee considered the issue of attracting generalists to practice in rural areas and concluded:

"The committee also considers that the delivery of health services by public hospitals in regional, rural and remote areas should be considered as part of the renegotiation of the next Australian Health Care Agreements" [137].

While this has met with some public support from the Australian Deputy Prime Minister and Health Minister, the extent to which this intention is carried forward remains to be seen.

It has been observed that:

"...little [good evidence] exists regarding the effects on service of different payment systems. Thus, we need to trial different systems, not simply enact the latest political ideology" [139].

SUMMARY

The available literature supports a role for the medical generalist as the most suitable and cost effective model for the delivery of medical services to rural and remote Australia. Like general practice in the city, rural generalism has been under-funded in the past. Recent initiatives such as better funding for enhanced primary care and procedural medicine has helped to redress that balance. These measures, together with workforce and training initiatives, may assist in attracting and retaining the medical generalist workforce in rural areas. However, changes to the funding of generalist medicine alone will not address the degradation of hospital infrastructure and staff capacity in rural areas – a key issue if generalists who might be attracted to these areas are to apply their skills for the benefit of rural communities.

Box 5.1 Funding Policy Considerations

1. The Australian Government should assume the lead role in funding the clinical teaching capacity of the health system. This should be regionally brokered among stakeholders, within broader state and national policy parameters. Direct investment would replace the current system of poorly auditable resource loadings for the clinical teaching capacity of designated public hospitals by State and Territory governments under Australian Health Care Agreements. Clinical teaching and research activity must be a funded and accountable core business of the entire health system, particularly in regional areas.
2. The focus of implementation of health workforce policy should be moved to the level of the region. In medicine, establish regionally-based mechanisms for planning and coordinating undergraduate education, vocational training pathways for medical graduates and junior doctors. Planning should engage universities, professional colleges, health service providers, communities and policy-makers.
3. Incentives should be provided for junior doctors to undertake generalist training with clear training and career structure as well as preferential access to procedural training posts in hospitals.
4. Funds pooling mechanisms at the regional or district level should be set up to support flexible and sustainable health care models in rural and remote communities that bridge the primary care and hospital care continuum. This could support more generalist training for rural practice.
5. The generalist model is a practical and cost effective means of meeting the comprehensive health needs of rural and remote communities which have lower population densities.
6. Addressing current rural funding inequities can support infrastructure for rural generalist practice where there has been a historical deterioration in resourcing. This infrastructure can support training, recruitment and retention of rural generalists. This could redress the downgrading of rural health services.

QUALITY AND SAFETY IN RURAL HEALTH CARE

A number of articles have emphasised the need for rural practice to address quality and safety issues [140-142]. The generalist model emphasis on mastery of a broad range of skills inevitably poses the question –‘is it good enough?’ Many healthcare services have been downgraded or closed on the assumption that they were not as good as a larger busier service. In this chapter we examine the evidence for this assumption and related quality issues.

ALWAYS AT RISK

Being a patient in a rural area is intrinsically risky. Rural industry, transport and mining industries have been demonstrated to be among the most risky industries to work in [48, 143, 144]. Long distance high speed travel on sparsely populated roads adds to the hazard [145]. The lack of a rural health service (or an inadequate health service) accentuates this intrinsic risk. Closure or downgrading of rural facilities means the loss of access to essential services for rural patients. Poor access to healthcare resource is compounded for many rural populations by lower socioeconomic status and education and lack of transport options including public transport [146].

The loss of skilled health professionals means a lack of skilled assistance. The genesis of the Advanced Trauma Life Support (ATLS) course was the experience of Dr J Styner, an orthopaedic surgeon who saw the consequences of an inadequately skilled and prepared health service following a light plane crash in rural Nebraska [147].

In considering the risk in rural areas we should always consider the question – ‘whose risk are we managing?’ The closure of a rural birthing service may reduce an individual hospital’s risk since it is then released from the responsibility of assisting women in pregnancy and labour. However, this perspective does not consider the risks to the woman nor the responsibilities of the hospital as a component of the broader healthcare system. Also, regardless of hospital role delineation, the hospital may still be faced with an acute obstetric emergency that it may be unable to cope with because of degraded skills and facilities.

A framework for considering risks, quality and safety of patient care in the rural context (‘assessment, resources, transport and support’) [148] is provided at Appendix D.

CLINICAL QUALITY

The quality of healthcare in rural area seems to be comparable to, or in some cases better than that found in urban settings in the small number of studies that have been undertaken [140]. One study examined a sample of 31,000 medical records drawn from a random selection of 51 hospitals to investigate the inter-hospital variation of adverse events (ie: injuries due to medical treatment) [149]. The study found substantial variability between hospitals although in general, primary teaching institutions had significantly higher rates (4.1%) and rural hospitals had significantly lower ones (1.0%). Some studies of more specialist areas of care such as hip fracture found evidence of improved quality of care in larger, urban and teaching hospitals, while nonetheless supporting the role of rural hospitals that ‘symbolise a small town’s identity, provide means to attract physicians’ [150].

SPECIFIC AREAS OF PRACTICE

PRIMARY CARE

The logical starting point for considering rural generalist practice is arguably the area of primary care. There is now considerable evidence of the benefit of primary care services as the basis for an effective health system [23, 119, 151, 152] including specific recognition of the importance of rural doctors in the Australian context [153] and continuity of care over the time span of illness [154]. The ability of the generalist to balance knowledge and judgement in the context of the patient and community may be important for many conditions [155]. In general practice in both rural and urban areas, measurement of quality remains a challenge [156].

DIAGNOSTIC SERVICES

Local access to diagnostic services supports local clinical management but raises the challenge of maintaining service quality. Models of continuing professional development in radiology [157] seems to have been well accepted and effective. The use of educational programs in ultrasound supported by later practice visits demonstrated retention of essential skills and the local provision of effective services [158-160]. The introduction of bedside pathology [161] has improved the cost effective and timely management of acute presentations to rural hospitals.

PROCEDURAL SERVICES

The value of procedural services in rural areas has been an area of contention. In their paper on the determinants of quality in procedural rural medical care, Hays et al concluded that:

“there is a continuing need for rural health professionals to be trained to provide procedural services in rural hospitals, and for rural hospitals to be maintained at a standard necessary to support quality services provision” [29].

Despite the rural generalist having a narrower range of skills in a particular specialist discipline area such as surgery, outcome studies suggest that there are equivalent outcomes and shared skill sets [141]. Not surprisingly the willingness of rural doctors to perform these services depends on the training and support that they received in practice [162].

SURGICAL CARE

In comparisons of urban and rural surgical practice, operative practice is of a high standard in both settings [163]. While indications for operations vary and rural practice is broader than urban practice, rural surgeons often surpass their urban colleagues in some quality process measures [164]. Similar conclusions have been drawn in relation to colonoscopy [165-167] and appendectomy [40]. Even when the generalist is not the surgeon - for example in colorectal surgery [168], the role of the generalist in patient care is vital.

TRAUMA

There is a greater mortality rate from trauma in rural areas. The evidence suggests that this relates to high speed road crashes, isolation and subsequent longer pre-hospital time [169]. Rural hospitals, especially where they are geographically remote, contribute significantly to trauma care and to improved outcomes [170]. One study found that triage and stabilisation of severely injured rural trauma victims at Level III emergency departments (EDs) before transfer to a Level I facility, achieved outcomes similar to national results [171]. Unexpected death of severely injured trauma victims remains a problem in rural Level III EDs and underscores the need to maintain skills and facilities. Support and training for paramedical personnel providing pre-hospital care is also important [172].

A study in southeast Queensland found that postgraduate training in and experience with medical emergencies is important in enhancing GPs' confidence and competence in dealing with emergencies and specific training was strongly supported [173].

CARDIOVASCULAR MEDICINE

Several studies have found that rural cardiac services provide similar quality of care for patients with acute myocardial infarction and, when combined with the ability to transfer patients to specific cardiac facilities as required, achieve similar health outcomes [174-176].

For stroke, there is less evidence. Rural doctors are typically in a quandary over management of stroke because of the absence of imaging (with a CT scan not often available). Treatment must then balance the risks of treatment based on clinical criteria versus transfer, delay and/or exacerbation of brain injury. This dilemma is emphasised by reviews of GP attitudes to stroke care [177].

OBSTETRICS

The safety of rural obstetric services has been demonstrated in Australia [39, 76, 178-180], USA [114, 181, 182] and Canada [183]. The presence of an effective rural obstetric service has been shown to improve outcomes compared to a service that routinely transfers obstetric patients.

Despite this data, the argument against rural obstetric services has focussed on the timely access to operative delivery services (eg: 'within 30 minutes') as set out in guidelines for obstetric anaesthesia services (Association of Anaesthetists of Great Britain and Ireland, Obstetric Anaesthetists Association 1998) and Towards safer childbirth (Royal College of Obstetrics and Gynaecology and Royal College of Midwives 1999:17-8) (cited in Tuffell et al [184]).

In a study of the implementation of these recommendations in a large urban hospital, operative delivery within 30 minutes was achieved in two out of three cases with 88% being delivered in 40 minutes and up to 4% of women remaining undelivered at 50 minutes. Notably, delay in delivery made no difference to the rate of admission to special care for babies over 36 weeks' gestation [184].

The introduction of such quality frameworks is probably contributing to loss of generalists practicing obstetrics. A Canadian study found that 43% of births were attended by family physicians. Of the 1,026 family physicians providing obstetric services, over half managed fewer than 25 deliveries per year. However, over the study period (1997-2000) a sharp decline was observed in the proportion of deliveries attended by 'low volume' family physicians (from 24% to 5%). This is likely to have a profound effect on obstetric services in smaller hospitals where most low-volume practice occurs [185].

ANAESTHESIA

Training for and the safety of rural anaesthesia has been also the subject of a number of studies [186-191]. Despite limited training opportunities, South Australian GP anaesthetists practised an impressive range of skills and, on average, practised safe and sensible anaesthetic [191]. There is probably scope for further improvements through improved training and skills update using simulation. Maintaining epidural services over many years is also achievable in rural areas [192].

AFTER HOURS CARE

The issue of after hours care has the focus of a number of initiatives including the European Working Time Directive [193] and the AMA National Code of Practice - Hours of Work, Shiftwork and Rostering for Hospital Doctors [194]. Neither of these contain the word 'rural' although the working papers for the AMA document does mention "recognition of the difficulties in applying the code to rural hospitals" [195].

Studies in Iceland [196] and United Kingdom (UK) [197] have considered these matters and while noting the commitment of rural practitioners to their communities, emphasise the need for an adequate workforce to allow time off.

THE THRESHOLD FOR COMPETENCE – TRAINING OR VOLUME?

Rural services have often been the subject of closure due to low volumes of services and an assumed postulated link to poor quality or outcomes. In “Use it or lose it”, Levitt reviewed the evidence for this [198] and concluded:

“There is some evidence that the extent in which the skill is practiced during the initial learning phase may be of greater importance than the maintenance of those skills.

Unsubstantiated criticism, however, may adversely affect doctors’ skills by reducing their confidence in their ability to perform them. In this respect, it may be a bit like ‘riding a bike’, once you perfect the skill and cease falling off, it is very unlikely that you will ever fall off again, irrespective of how long it has been between rides. If, however, confidence in riding were lost, then the probability of falling would increase.”

This and other studies led to a consensus statement by the Society of Obstetricians and Gynaecologists of Canada, the College of Family Physicians of Canada, and the Society of Rural Physicians of Canada (see Appendix E) which states that “competence in obstetric care is not dependent on the number of births attended annually” and that “maintaining competence depends on an appropriate, ongoing, and self-directed program of continuing professional development”.

QUALITY CONTROL MECHANISMS

So what quality control mechanisms are there? If general practice sees ‘frequent things frequently’ and specialist practice sees ‘infrequent things frequently’, then rural practice ‘sees infrequent things infrequently’ without ready access to specialist support. In this setting it is important for doctors to receive sound initial rural training, especially in rural procedural skills as well as access to effective continuing education and support.

The Training for Rural and Remote Procedural GPs Program has shown that GPs are interested in, and value, skills acquisition in selected areas of practice and that they feel this has improved their confidence in procedural practice. Of those that were enrolled in the anaesthetics, surgery and obstetrics component of the program 76.1% strongly endorsed the view that their level of procedural knowledge and skills had increased as a result of the program, and that 95.7% believed their confidence in performing new procedures had also increased [199].

Continuing up-skilling in rarely-used crisis skills such as difficult airways management borrows from anaesthetic practice and the aviation industry where algorithms and simulation have proved successful [200-202]. Standardised setups and crisis kits (e.g. difficult airway kits) have been widely used [203].

This ongoing education can be supported by clinical privileges regimens [204] that provide credentialing on the basis of training and experience and mandated continuing professional development [38].

Quality auditing practices that are appropriate to the rural practice setting may also be of benefit [205]. A specific set of indicators has been developed for hospitals of less than 50 beds [206].

SUMMARY

In summary the issue of safety and quality in rural healthcare has been explored. Most reviews indicate that rural practice can safely deliver a wide range of low volume specialised services providing that staff are properly trained. Skills for rare conditions can and should be practiced in simulated environments and facilities audited. These services may be enhanced by telemedicine support and improved working hours. The cost of not providing these services is a background risk, which is itself, unacceptable.

Box 6.1 Safety and Quality Policy Considerations

1. Policy options should be developed that requires clear evidence base comparing relevant alternatives before services are restricted or withdrawn on the basis of quality and safety.
2. Regulatory and accreditation arrangements for rural facilities should not be based on urban models and assumptions.
3. The intrinsic health risks of isolation need to be recognised.
4. Many areas of medical practice including primary care, plain radiography, ultrasound, surgery, endoscopy, trauma care, acute cardiovascular care, obstetrics and anaesthesia can be safely and effectively delivered by generalists.
5. Proximate after hours care needs to be available to rural patients but delivered in a way that addresses the issues of fatigue.
6. Competence in generalist practice, especially in procedural practice, is related more to initial training than frequency of skills used.
7. Skills programs are important for practitioners to maintain knowledge of current practice standards and to rehearse more rarely used skills.
8. As in urban practice, clinical privileging and quality auditing should be supported in rural generalist practice.

SERVICE MODELS AND REGULATORY FRAMEWORKS

Education and training, healthcare financing and the historical development of and relationships between medical disciplines are all factors in promoting or impeding generalism in medicine. Here we examine other structural factors that shape the role of the generalist including health service delivery models, the legislative framework that regulate clinical practice and how decisions are made on who performs what clinical work in healthcare facilities.

PRINCIPLES OF HEALTHCARE

When considered as a system, healthcare has four overarching objectives:

- “the good health of citizens’ - although this relies on much more than the health system alone
- equity - ensuring services are available according to need, and are paid for according to capacity to pay
- low cost, or value for money
- the satisfaction of the various participants – consumers in terms of access, quality, effectiveness, courtesy etc; providers in terms of the support the system gives them to apply their professional expertise and in providing reasonable remuneration; and funders in terms of returns on investments” [207]

There is a nexus between healthcare models, financing, workforce and regulation. While rural generalists offer some solutions as a workforce model for health policy-makers, generalists need to train, work and thrive in service settings that are viable and acceptable. In rural and remote settings, such models have to accommodate the many variations in geographic isolation, population characteristics and health profile. Rural services face diseconomies of scale and other cost disabilities and are intrinsically more challenging to deliver [208].

In order to understand and plan for the development and support of the rural and remote generalist workforce it is necessary to factor in the scope of practice for rural doctors. This is distinct from that relevant to other specialists/sub-specialists by virtue of the remote context, where services are provided with minimal medical technologies, and by the less reductionist nature of the rural doctor’s expertise.

Critical aspects of competent practice would include delineating the extent of their role and capacity and appreciating when to refer. Innovative models for specialist/generalist cooperation are also becoming an increasingly important and a unique practice feature. The professional relationships between specialists, rural and remote medical practitioners and health professionals in the provision of care, exemplify the unique nature of rural and remote medicine in terms of its breadth and depth and the context in which it is delivered.

The all-encompassing nature of rural and remote medicine means that teamwork models, which include multi-skilled nursing and allied health professional staff, as well as hospital and other health service infrastructure, are a key feature of the clinical model. This further differentiates these skills from those performed by both un-referred care providers and specialists in urban environments.

Typologies of rural and remote models of primary health care have been developed [209]. For the purposes of this analysis, it is useful to consider service models according to the underlying construct: business or funding models [210]; multidisciplinary models [211, 212]; community-driven comprehensive care; and technology-driven models.

BUSINESS OR FUNDING MODELS

Funding arrangements support, shape and sometimes distort models of care in rural and remote areas. Health financing in Australia is characterised by competitive or combative relationship between State and Federal governments. States have primary responsibilities for hospitals, public hospital specialist services and population health. The Federal government is a major contributor to public hospital funding, manages the Medicare and the Pharmaceutical Benefits Schemes, supports private health insurance through tax-incentives, funds aged care and supports many other programs including Aboriginal and Torres Strait Islander health services and population health initiatives [137, 210].

The problems associated with blurred lines of accountability have led to proposals for a national approach for health services that deliver cost and workforce benefits [213]. In particular, replacing State-based health financing systems with regional arrangements has been described as a way of bringing efficiencies to service provision as well as bringing health services closer to the 'users' [207].

In rural areas, financing arrangements between levels of government can impact upon viable practice. Procedural practice in the rural environment necessarily involves hospital-based care as does providing extended after hours services [211, 214, 215]. Continuity of care, maintenance of skills and strong clinical networks are enhanced by engaging doctors from community general practice, the RFDS or Aboriginal health services in hospitals care. Sensible as this may be, such arrangements frequently fall afoul of Federal/State funding policies as they are applied at the district level.

Split responsibilities and cost shifting between State and Federal departments have been identified as barriers to innovative local solutions the viability issues that affect rural procedural practice [216]. The Commonwealth and States have begun to address this situation with targeted grants and training schemes for the acquisition and maintenance of procedural skills, as well as indemnification of practitioners working within State facilities when providing procedural services [217]. Models of funds-pooling for Aboriginal primary health care have been applied in a number of rural and remote regions.

MULTIDISCIPLINARY MODELS

A number of OECD countries have adopted comprehensive care models that blend general practice, nursing, allied health and often specialist care in the same practice setting. Some have GPs as gatekeepers, others have nurse-led triage and or enhanced clinical roles for nurses. Sometimes the GP role is diminished with an increased emphasis on specialist services [209]. Similar models were developed in Australia from the 1970s although they remain relatively uncommon in the primary care landscape.

COMMUNITY DRIVEN COMPREHENSIVE CARE

Probably the best example of a community-driven model are the Aboriginal Community Controlled Health Services (ACCHSs) in Australia. These services are initiated and managed by local Aboriginal communities through elected boards of management. Anticipating the Alma Ata Declaration on Primary Health Care, ACCHSs provide accessible, culturally appropriate, needs-based health care with a preventive and social justice focus. Beyond provision of health and support services, ACCHSs have key sites for community development, education, employment and social action [218].

The size and scope of ACCHSs differ, but are characterised by team-based care and a central role for Aboriginal Health Workers working alongside doctors and nurses. ACCHSs clinics may function as 'one-stop shops' with dispensaries, visiting specialists and allied health services. In rural and remote settings, ACCHSs doctors often share inpatient, after-hours and sometimes obstetric care (for instance Bega Garberringu in Kalgoorlie).

TECHNOLOGY-BASED MODELS

Information and communication technology offers alternatives that can replace, enhance or support conventional health services. The application of telemedicine in rural areas has been described as high on promise but disappointing in delivery [219]. The main modalities have been store-and-forward, self-monitoring/testing and clinician-interactive services. Another application in rural Australia has been a specialist dermatology referral service ('Telederm'), used by the Australian College of Rural and Remote Medicine for training, professional development and as a clinical referral service for rural doctors.

Telemedicine offers opportunities to link emergency room (ER) staff at large trauma centres with rural ERs for advice and support [220]. In one study [221], a telemedicine system was utilised to provide rapid consultation from surgeons at the level 1 trauma centre and to provide enhanced educational opportunities for rural ambulance emergency first responders. The system was judged to be life saving in three out of 41 'tele-trauma consults' and both rural and trauma centre providers felt the system enhanced clinical care.

South Australian experience helped clarify the use of telemedicine in rural ERs which clarified the clinical picture (75%), aided decision to retrieve (30%), aided decision not to retrieve (45%). The technology significantly contributed to assistance with end-of-life decisions, major trauma managed by nurse without doctor, difficult airways, psychiatric assessment for suitable mode of transport, supervision of procedure by GP, supervision of rural teams at work and crisis decision making [222].

THE COMMON THEME: TEAM-BASED CARE

When applied within the Australian context, aspects of these models can either support or impair the role of a generalist medical practitioner. Team-based care can ensure that the generalist doctor can contribute as the 'medical expert' to a team with diverse skills. Health financing arrangements that support team-based care (including continuity across the primary and secondary care interface) also support medical generalism. As technology matures, some applications of telemedicine may improve patient outcomes, reduce professional isolation and enhancing specialist outreach to smaller rural settings.

LEGAL FRAMEWORKS AND FLEXIBLE MODELS

The health professional regulatory framework is under review as a result of the Productivity Commission's review of health workforce [64]. Health professional legislation in Australian states and territories provides a mechanism for registration of designated groups. That said, there is surprisingly little clinical practice that is directly proscribed by law. The main exception is prescription and supply of medicines under the various state poisons and therapeutic substances acts and regulations. However, state and territory jurisdictions, as service providers more than regulators, commonly issue operational directives that have the effect of limiting flexible service models or generalist practice.

Examples of administrative barriers to flexible practice commonly includes health workers other than doctors being unable to initiate requests for pathology or imaging services. Generalist medical practitioners cannot prescribe cytotoxic agents in cancer treatment or erythropoietin for renal failure. Professional insurers also are becoming increasingly involved in determining scope of practice and training requirements (for example, higher premiums and training requirements for performing contractive hormone implants). In many rural situations, these restrictions are a barrier to sensible, team-based approaches to local care delivery.

The Productivity Commission [64] noted that rural innovation is often a catalyst for wider reforms. Examples include planned trials: the trial of the Physician Assistant model in Queensland with a focus on rural and remote areas; training for role-extension for rural paramedics into hospitals and community facilities.

The shortage of medical practitioners in these areas has been a key driver for the introduction of the Nurse Practitioner model around Australia.

DELEGATION AND SUBSTITUTION

Most regulatory and privileging models rely primarily on an individual's qualifications and experience to determine scope of clinical practice. Clinical privileging involves delineating the extent of clinical practice within a particular organisation based on the individual's credentials and performance and the capability of the organisation.

In reviewing the issue of advanced clinical practice roles for nurses, the OECD notes the policy tension between pursuing further regulation and codification of advanced professional roles for nursing as opposed to "allowing advanced practitioner roles to evolve locally ... less defined by uni-professional groupings" [223]. Rigid demarcation of roles and scope of practice inherent in 'mono-professional' approaches to workforce mitigate against efficiency, effectiveness and sustainability of health care [223].

The 'delegated practice' model is an alternative to 'special training' for extended clinical roles. Rather than the worker having to undertake a centrally specified course of study to achieve an advanced (but often highly codified) scope of practice, the model emphasises 'locally negotiated autonomy'. A base level of clinical competence is assumed and the worker then progressively acquires advanced skills and knowledge in any medical field while working under the delegation and supervision of a medical practitioner. This is the philosophical basis of the US Physician Assistant model [224]. For primary care and many areas of specialist practice, team-based approaches with middle-level workers providing extended care under local delegation is likely to be a practical means of extending the reach of health services in rural areas.

The delegated practice model can also be applied to medical generalists with extended specialist skills that might be considered to be outside a usual scope of practice. A support/mentor relationship with a local or visiting specialist in providing supervision, clinical audit and training support helps support quality, safety and accessibility while avoiding red-tape and 'special' clinical extension qualifications. Other than procedural disciplines such as surgery, the model would offer possibilities for extended delivery of nephrology and oncology services in rural and remote locations.

The Productivity Commission has supported proposals for delegated practice arrangements through Medicare with discounted benefits payable for tasks performed by middle-level workers under the supervision of medical practitioners (Recommendation 8.3) [64]. Such delegated items ('practice nurse item numbers') have already been introduced by the Australian Government in relation to wound dressings, cervical cancer screening and a growing range of clinical tasks when performed by registered nurses, enrolled nurses or registered Aboriginal Health Workers on behalf of a doctor.

SUMMARY

While necessity may well be the mother of invention, rural and remote communities will need support to devise financially sustainable service models and to overcome administrative and regulatory barriers if they are to capitalise on the current investments in production of skilled rural generalist doctors. Delegated practice models have application both to middle level providers to support medical generalist and specialist practice in rural and remote areas but also to medical generalist in relation to more advanced specialist roles.

Box 7.1: Service Models, Legislation, and Clinical Privileging Policy Considerations

1. Effort must be made to reduce the barriers preventing the utilisation of the full range of generalist practice.
2. Different funding models replacing Commonwealth State divides can provide a more regional focus to health service delivery. These should be supportive of more “generalist” training and practice for rural communities.
3. Recognition of the role of mid-level practitioners such as Physician Assistants or Nurse Practitioners: These roles can complement the skills of the medical generalist and provide an additional boost for ‘rural generalist’ workforce, and expand the capacity of health services to provide a wider range of services.
4. Indemnity costs have become a barrier to rural generalism (retention and recruitment) and global cover for rural proceduralists has assisted in stemming the flow away from this. Models of care need to incorporate appropriate addressing of this issue.
5. Expanded scope of practice should explore the expansion of rural medical generalism into specialist areas and the integration of other disciplines into generalist primary health care in rural and remote communities. Such expansion of skills base should not be limited to nursing, but also Aboriginal Health Workers and paramedics.
6. The model of increased Community participation in planning, oversight and delivery of rural and remote health services may provide support for a more applicable suite of services including generalists from a range of disciplines.
7. A range of services can be supportive of rural generalist practice but fly-in/fly-out services such as MSOAP and RFDS cannot replace a skilled on site workforce in many communities. Local networks and hub and spoke models supplemented by fly-in/fly-out services can provide increased services and support for rural generalist practice.

SUMMARY OF POLICY OPTIONS

WORKFORCE SUPPLY

- Issues affecting the supply of rural generalist workforce need to be addressed
- Rurally based medical school and vocational training needs to be encouraged
- Commonwealth funding of procedural training places – There are currently no incentives for registrars to undertake procedural training. While currently a state responsibility, the Commonwealth should take responsibility for funding procedural training places and ensure all training places, where possible, are located in regional and rural centres where rural proceduralists are most needed
- Indigenous communities suffer from the greatest health workforce shortages. Policy initiatives need to address the enhancement factors for the supply of Australian medical graduates into this area
- Indigenous health professionals are underrepresented in the Australian health system. Recruitment and retention strategies for Indigenous people need to be factored into any approach addressing workforce shortages

EDUCATION AND TRAINING FOR GENERALISM

- Articulated “generalist” pathways in training within hospital and community sectors, provides a solution to the skills shortages in rural and remote communities
- Significant workforce enhancers are already in place and can be further enhanced by additional incentives and infrastructure within rural and remote communities
- Commonwealth and State divides in community and facility based training need to be synchronised to reduce barriers to more expedient training of generalists
- The opportunity exists for the rural and remote medical education sector to collaborate to influence the redesign of education and training arrangements to create efficiencies, facilitate cross accreditation arrangements, (including streamlining) in the promotion of generalism and new career pathways in rural medicine from medical school to CPD
- Training coalition of the following organisations recognising rural generalist training, Universities, Rural Clinical Schools, and PGMEC:
 - seek representation on the National Advisory Health Workforce Improvement Agency
 - contribute to the reform of education and training arrangements to facilitate contestability
 - ensure the recognition of rural and remote medicine by the new national accreditation agency
 - support education and training initiatives required for safe delegated practice arrangements
 - contribute to multidisciplinary training initiatives
- Better support for Universities committed to the training of generalists
- Policy funding for development and trialling of accelerated pathways to vocational recognition for rural medicine generalists (curricula, mapping, tracking and recording mechanisms, RPL processes, joint rural clinical placement accreditation arrangements)
- Extend the Queensland rural generalist initiative to other states to facilitate shared accreditation and educational arrangements at prevocational levels

FUNDING RURAL GENERALISM

- The Australian Government should assume the lead role in funding the clinical teaching capacity of the health system. This should be regionally brokered among stakeholders, within broader state and national policy parameters. Direct investment would replace the current system of poorly auditable resource loadings for the clinical teaching capacity of designated public hospitals by State and Territory governments under Australian Health Care Agreements. Clinical teaching and research activity must be a funded and accountable core business of the entire health system, particularly in regional areas
- The focus of implementation of health workforce policy should be moved to the level of the region. In medicine, establish regionally-based mechanisms for planning and coordinating undergraduate education, vocational training pathways for medical graduates and junior doctors. Planning should engage universities, professional colleges, health service providers, communities and policy-makers
- Incentives should be provided for junior doctors to undertake generalist training with clear training and career structure as well as preferential access to procedural training posts in hospitals
- Funds pooling mechanisms at the regional or district level should be set up to support flexible and sustainable health care models in rural and remote communities that bridge the primary care and hospital care continuum. This could support more generalist training for rural practice
- The generalist model is a practical and cost effective means of meeting the comprehensive health needs of rural and remote communities which have lower population densities
- Addressing current rural funding inequities can support infrastructure for rural generalist practice where there has been a historical deterioration in resourcing. This infrastructure can support training, recruitment and retention of rural generalists. This could redress the downgrading of rural health services

QUALITY AND SAFETY IN RURAL HEALTHCARE

- Policy options should be developed that requires clear evidence base comparing relevant alternatives before services are restricted or withdrawn on the basis of quality and safety
- Regulatory and accreditation arrangements for rural facilities should not be based on urban models and assumptions
- The intrinsic health risks of isolation need to be recognised
- Many areas of medical practice including primary care, plain radiography, ultrasound, surgery, endoscopy, trauma care, acute cardiovascular care, obstetrics and anaesthesia can be safely and effectively delivered by generalists
- Proximate after hours care needs to be available to rural patients but delivered in a way that addresses the issues of fatigue
- Competence in generalist practice, especially in procedural practice, is related more to initial training than frequency of skills used
- Skills programs are important for practitioners to maintain knowledge of current practice standards and to rehearse more rarely used skills
- As in urban practice, clinical privileging and quality auditing should be supported in rural generalist practice

SERVICE MODELS AND REGULATORY FRAMEWORKS

- Effort must be made to reduce the barriers preventing the utilisation of the full range of generalist practice
- Different funding models replacing Commonwealth State divides can provide a more regional focus to health service delivery. These should be supportive of more “generalist” training and practice for rural communities
- Recognition of the role of mid-level practitioners such as Physician Assistants or Nurse Practitioners: These roles can complement the skills of the medical generalist and provide an additional boost for ‘rural generalist’ workforce, and expand the capacity of health services to provide a wider range of services
- Indemnity costs have become a barrier to rural generalism (retention and recruitment) and global cover for rural proceduralists has assisted in stemming the flow away from this. Models of care need to incorporate appropriate addressing of this issue
- Expanded scope of practice should explore the expansion of rural medical generalism into specialist areas and the integration of other disciplines into generalist primary health care in rural and remote communities. Such expansion of skills base should not be limited to nursing, but also Aboriginal Health Workers and paramedics
- The model of increased Community participation in planning, oversight and delivery of rural and remote health services may provide support for a more applicable suite of services including generalists from a range of disciplines
- A range of services can be supportive of rural generalist practice but fly-in/fly-out services such as MSOAP and RFDS cannot replace a skilled on site workforce in many communities. Local networks and hub and spoke models supplemented by fly-in/fly-out services can provide increased services and support for rural generalist practice

REFERENCES

- [1] World Health Organization. The World Health Report 2006 - Working together for health. Available at: <http://www.who.int/whr/2006/en/>; 2006.
- [2] Duckett SJ. Health workforce design for the 21st century. *Australian Health Review*. 2005;29(2):201-10.
- [3] Commonwealth Department of Health and Aged Care. General practice in Australia: 2000. Canberra: Commonwealth of Australia 2000.
- [4] Colditz GA, Elliott CJ. Workload in rural practice: implications for education and health service structure. *Australian Family Physician*. 1978;7(5):571-5.
- [5] Phillips WR, Haynes DG. The Domain of Family Practice: Scope, Role and Function. *The Keystone Papers: Formal Discussion Papers from Keystone III*. 2001;33(4):273-7.
- [6] Turnberg L. Are generalists still needed in a specialised world?: Survival of the general physician. *British Medical Journal*. 2000;320:438-40.
- [7] Loeffler IJ. Are generalists still needed in a specialised world? The renaissance of general surgery. *British Medical Journal*. 2000;320:436-8.
- [8] British Medical Association. Healthcare in a rural setting. London, UK: British Medical Association; 2005. Report No.: 0954861523.
- [9] Albritton W, Bates J, Brazeau M, Busing N, Clarke J, Kendel D, et al. Generalism versus subspecialization: Changes necessary in medical education. *Canadian Journal of Rural Medicine*. 2006;11(1):126-8.
- [10] Australian Medical Workforce Advisory Committee. Sustainable Specialist Services: A Compendium of Requirements – 2004 Update, AMWAC Report 2004.4. Sydney: AMWAC; 2004.
- [11] Humphreys J, Jones J, Mildenhall D, Mara P, Chater B, Rosenthal D, et al. The influence of geographical location on the complexity of rural general practice activities. *Medical Journal of Australia*. 2003;179(October):416-20.
- [12] Wetmore S, Rivet C, Tepper J, Tatemehi S, Donoff M, Rainsberry P. Defining core procedure skills for Canadian family medicine training. *Canadian Family Physician*. 2005;51(10):1364-5.
- [13] Chaytors RG, Szafran O, Crutcher RA. Rural-urban and gender differences in procedures performed by family practice residency graduates. *Family Medicine*. 2001;10:766-71.
- [14] Young RA, Byrd AN. Rural-urban and gender differences in procedures performed by family practice residency graduates. *Texas Medicine*. 1999;95(2):64-8.
- [15] Baldwin LM, Hart LG, West PA, Norris TE, Gore E, Schneeweiss R. Two decades of experience in the University of Washington Family Medicine Residency Network: practice differences between graduates in rural and urban locations. *Journal of Rural Health*. 1995;11(1):60-72.
- [16] World Organization of Family Doctors. The role of the general practitioner/family physician in health care systems: A statement from WONCA: WONCA; 1991.
- [17] Subcommittee on Primary Health Care of the Provincial Co-ordinating Committee on Community and Health Science Center Relations (PCCCAR). *New Directions in Primary Health Care*. Toronto; 1996.
- [18] College of Family Physicians. *Family Medicine in Canada: Vision for the Future*. Ontario: Available at: http://www.cfpc.ca/local/files/Communications/Health%20Policy/FAMILY_MEDICINE_IN_CANADA_English.pdf. Accessed 14 May 2007; 2004.
- [19] Martin JC, Avant RF, Bowman MA, et al. The Future of Family Medicine: a collaborative project of the family medicine community. *Annals of Family Medicine*. 2004;2:Suppl 1:S3-32.
- [20] Queensland Health. *Country Gold; Supplying rural and remote Queensland sufficient, superbly prepared rural generalist practitioners. Providing Australian graduates a premier pathway to rural generalist practice. "Roma Agreement"*. Brisbane: QH; 2006.

- [21] Larson EB. Health care system chaos should spur innovation: summary of a report of the Society of General Internal Medicine Task Force on the Domain of General Internal Medicine. *Annals of Internal Medicine*. 2004;140(8):639-43.
- [22] Wachter RM, Goldman L. The Emerging Role of "Hospitalists" in the American Health Care System. *New England Journal of Medicine*. 1996;335:514-7.
- [23] Health Evidence Network. What are the advantages and disadvantages of restructuring a health care system to be more focused on primary care services? Copenhagen: WHO; 2004.
- [24] Royal Australian College of General Practitioners. Rural general practice - Definition. Available at: <http://www.racgp.org.au/Content/NavigationMenu/About/Faculties/NationalRuralFaculty/RuralGeneralPracticeDefinition/default.htm> Accessed 30 April 2007: RACGP; 2006.
- [25] Australian Government Department of Health and Ageing. General Practice in Australia: 2004. First Edition: May 2005 ed. Canberra 2005.
- [26] Australian College of Rural and Remote Medicine. The ACRRM Position on the Specialty of General Practice. Brisbane: ACRRM; 2006.
- [27] Britt H, Miller G, Valenti L. 'It's different in the bush': A comparison of general practice activity in metropolitan and rural areas of Australia 1998-2000. Canberra: Australian Institute of Health and Welfare; 2001. Report No.: General Practice Series Number 6.
- [28] Smith J, Hays R. Is rural medicine a separate discipline? *Australian Journal of Rural Health*. 2004;12:67-72.
- [29] Hays R, Veitch C, Evans R. The determinants of quality in procedural rural medical care. Available at: <http://rrh.org.au>. Accessed 15 February 2006. *Rural and Remote Health*. 2005;5: 473.
- [30] Davie M. General Practitioner Anaesthesia Survey 2006. *Anaesthesia and Intensive Care*. 2006;34(6):770-5.
- [31] Tilyard MW, Williams S, Seddon RJ, Oakley ME, Murdoch CJ. Is outcome for general practitioner obstetricians influenced by workload and locality? *New Zealand Medical Journal*. 1988;101:207-9.
- [32] Tolhurst H, Dickinson J, Ireland MC. Severe emergencies in rural general practice. *Australian Journal of Rural Health*. 1995;3:25-33.
- [33] Peterson C. Health services restructuring: Changes in the roles of General Practitioners. *Australian Journal of Primary Health-Interchange*. 1996;2(2):12-20.
- [34] Ricketts T. The changing nature of rural health care. *Annual Review of Public Health*. 2000;21:639-57.
- [35] Sondergeld S, Nichols A. Rural proceduralists: an endangered species. Report of the Queensland Rural Indemnity Study, 1997. *Australian Journal of Rural Health*. 1998;6(3):126-31.
- [36] Hodgkinson K. Crookwell District Hospital Operating Theatre Closure - Hansard Papers. Available at: <http://www.parliament.nsw.gov.au/prod/PARLMENT/hansArt.nsf/V3Key/LA20031015030> . Accessed 11 November 2007; 2003.
- [37] Kamien M. Report of the Ministerial inquiry into the recruitment and retention of country doctors in Western Australia; 1987.
- [38] Hays R. Clinical privileges for rural general practitioners. *Australian Journal of Rural Health*. 1997;5(2):94-6.
- [39] Cameron B, Cameron S. Outcomes in rural obstetrics, Atherton hospital 1991-2000. *Australian Journal of Rural Health*. 2001;9(Suppl.):S39-S42.
- [40] Iglesias S, Saunders L, Tracey S, Thangisalam N, Jones L. Appendectomies in rural hospitals: Safe whether performed by specialist or GP surgeons. *Canadian Family Physician*. 2003;49:328-33.
- [41] Green A. Maintaining surgical standards beyond the city in Australia. *ANZ Journal of Surgery*. 2003;73:232-3.
- [42] Weigers TA. General practitioners and their role in maternity care. *Health Policy*. 2003;66(1):51-9.

- [43] Iglesias S, Hutten-Czapski P. Joint position paper on training for rural family practitioners in advanced maternity skills and caesarean section. *Canada Journal of Rural Medicine*. 1999;4(4):209-16.
- [44] Australian Medical Association. General Practice/Rural Medicine Training. Canberra: AMA 2005 Available at: <http://www.ama.com.au/web.nsf/doc/WEEN-6CY3MF>. Accessed 13 March 2007.
- [45] Australian Institute of Health and Welfare. Medical labour force 2004. AIHW cat. no. HWL 39. Canberra: AIHW (National Health Labour Force Series No. 38). 2006.
- [46] Australian Medical Workforce Advisory Committee. The General Practice Workforce in Australia: Supply and Requirements to 2013, AMWAC Report 2005.2 (Summary). Sydney; 2005.
- [47] Australian Medical Workforce Advisory Committee. The Public Hospital Medical Workforce in Australia. AMWAC Report 2004.3 Sydney: AMWAC; 2004.
- [48] Australian Institute of Health and Welfare. Rural, regional and remote health—Indicators of health. AIHW Cat. No. PHE 59. Canberra: AIHW (Rural Health Series no. 5); 2005.
- [49] National Rural Health Policy Sub-Committee. Improving access to specialist services in rural Australia: Discussion paper. Canberra; 2004.
- [50] Australian Medical Workforce Advisory Committee. The Surgical Workforce In Australia: An Overview of Supply and Requirements 2004-2015, AMWAC Report 2005. Sydney: AMWAC; 2005.
- [51] Australian Medical Workforce Advisory Committee. The Specialist Obstetrics and Gynaecology Workforce - An Update 2003-2013, AMWAC Report 2004.2. Sydney: AMWAC; 2004.
- [52] Australian Medical Workforce Advisory Committee. The Specialist Anaesthesia Workforce In Australia, AMWAC Report 2001.5. Sydney: AMWAC; 2001.
- [53] Australian Medical Workforce Advisory Committee. The Emergency Medicine Workforce In Australia - An Update: 2002 to 2012, AMWAC Report 2003.6. Sydney: AMWAC; 2003.
- [54] Australian Institute of Health and Welfare. Australia's health 2002. Canberra: AIHW; 2002.
- [55] Health Workforce Queensland, New South Wales Rural Doctors Network. Medical practice in rural and remote Australia: Combined Rural Workforce Agencies National Minimum Data Set report as at 30th November 2005. Brisbane: HWQ; 2006.
- [56] Australian Medical Workforce Advisory Committee. The Emergency Medicine Workforce in Australia, AMWAC Report 1997.1. Sydney; 1997.
- [57] Australian Institute of Health and Welfare. Nursing and midwifery labour force 2004. AIHW cat. no. HWL 38.: AIHW (National health labour force series no. 37). 2006.
- [58] Sparke C. The rise of Indigenous doctors. *Australian Doctor*. 2000 17 March:37-8.
- [59] Australian Indigenous Doctors Association. Indigenous doctors (webpage on the internet). Available at: <http://www.aida.org.au/category.php?id=74>. Accessed 11 November 2007.; 2007.
- [60] Access Economics. Indigenous Health Workforce Needs – a report for the Australian Medical Association. Available at: <http://www.ama.com.au/web.nsf/doc/WEEN-6PV2VX>. Accessed November 11 2007.; 2004.
- [61] Australian Government Productivity Commission. Overcoming Indigenous Disadvantage: Key Indicators 2005. Available at: www.pc.gov.au/gsp/indigenous. Accessed November 11 2007.; 2005.
- [62] Ministerial Council on Education Training Employment and Youth Affairs. National Report on Schooling in Australia preliminary paper. 2004 National Benchmark Results - Reading Writing and Numeracy. Available at: www.mceetya.edu.au/mceetya/default.asp?id=13342. Accessed November 11 2007.; 2004.
- [63] Office of Aboriginal and Torres Strait Islander Health, National Aboriginal Community Controlled Health Organisation. Service Activity Reporting: 2003-04 Key Results: Commonwealth of Australia 2006.
- [64] Productivity Commission. Australia's Health Workforce. Canberra; 2005.

- [65] Standing Committee on Aboriginal and Torres Strait Islander Health. Aboriginal and Torres Strait Islander Health Workforce National Strategic Framework. AHMAC Canberra. Available at: www.health.gov.au/internet/wcms/publishing.nsf/Content/health-oatsih-pubs-wrkstrgy1.htm. Accessed November 11 2007; 2002.
- [66] Australian Institute of Health and Welfare. Expenditures on health for Aboriginal and Torres Strait Islander Peoples, 2001–02. AIHW cat. no. HWE 30. Canberra: AIHW (Health and Welfare's Expenditure Series no. 23, appendices, table A9.20). 2005.
- [67] Australian Government Department of Health and Ageing. Table 6: GP headcount by RRMA 1995-96 to 2004-05. Available at: [http://www.health.gov.au/internet/wcms/publishing.nsf/Content/4F4DB38797665644CA256FFE000C3C7F/\\$File/Table%206_Jan%2029%2007.pdf](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/4F4DB38797665644CA256FFE000C3C7F/$File/Table%206_Jan%2029%2007.pdf). Accessed 15 April 2007; 2007.
- [68] Australian Government Department of Health and Ageing. Table 8: FWE GPs by RRMA 1995-96 to 2004-05: Available at: [http://www.health.gov.au/internet/wcms/publishing.nsf/Content/4F4DB38797665644CA256FFE000C3C7F/\\$File/Table%208_Jan%2029%2007.pdf](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/4F4DB38797665644CA256FFE000C3C7F/$File/Table%208_Jan%2029%2007.pdf). Accessed 15 April 2007.; 2007.
- [69] Australian Government Department of Health and Ageing. General Practice Statistics Explanatory Notes. Available at: <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pcd-programs-gpstats-explan.htm>. Accessed 15th April 2007; 2007.
- [70] Horvath J. The Relationship between Policy, Pedagogy, and Practice in Australian Medical Education. *“Medical Education Towards 2010: Shared Visions and Common Goal”*. Canberra: 7th Mar 2005. Available at: [http://www.health.gov.au/internet/wcms/publishing.nsf/Content/E97C1E8AAB7FEB1CCA2570AD00809A34/\\$File/deptsp070305.pdf](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/E97C1E8AAB7FEB1CCA2570AD00809A34/$File/deptsp070305.pdf). Accessed 14 May 2007. 2005.
- [71] Conference Proceedings. Medical Education Towards 2010: Shared Visions and Common Goals; 2005 7-9 March. Available at: <http://www.mededconference.org.au/meded2005/pdf/proceedings.pdf>. Canberra; 2005.
- [72] Kurucsev K. The medical indemnity crisis. GP Speak Magazine. 2002 19 Feb. Lismore.
- [73] Watts RW, Marley JE, Beilby JJ, MacKinnon RP, Doughty S. Training, skills and approach to high-risk obstetrics in rural GP obstetricians. *The Australian and New Zealand Journal of Obstetrics and Gynaecology*. 1997;37(4):424-6.
- [74] Rural Doctors Association of Australia. The impact of the Trade Practices Act on procedural GPs in rural and remote areas. A supplement to the Submission to the Review of the Impact of the TPA on the Recruitment and Retention of the Rural Medical Workforce. Canberra: RDAA; 2002.
- [75] US News. America's Best Graduate Schools: Medical Specialties: Rural Medicine. Available at: http://www.usnews.com/usnews/edu/grad/rankings/med/brief/medsp06_brief.php. Accessed 13 May 2007 2004.
- [76] Woollard L, Hays R. Rural Obstetrics in NSW. *The Australian and New Zealand Journal of Obstetrics and Gynaecology*. 1993;33:240-2.
- [77] The Committee of Presidents of Medical Colleges. What is the CPMC. 2004:Available at: www.cpmc.edu.au/index.html. Accessed 15 August 2004.
- [78] Downton SB, Stokes ML, Rawstron EJ, Pogson PR, Brown MA. Postgraduate medical education: rethinking and integrating a complex landscape. *Medical Journal of Australia*. 2005;182(4):177-80.
- [79] Joyce C, Stoelwinder J, McNeil J, Piterman L. Riding the wave; current and emerging trends in graduates from Australian university medical schools. *Medical Journal of Australia*. 2007;186(6):309-12.
- [80] Commonwealth Department of Health and Family Services. General practice education — the way forward. Report of the Ministerial Review of General Practice Training. Canberra: CDHFS; 1998.

- [81] Acil Tasman. Evaluation of the regionalisation of general practice vocational training. Melbourne; 2005.
- [82] Strasser RP, Hays RB, Kamien M, Carson D. Is Australian rural practice changing? Findings from the national rural general practice study. *Australian Journal of Rural Health*. 2000;8:222-6.
- [83] Geyman JP, Hart LG, Norris TE, Coombs JB, Lishner DM. Educating generalist physicians for rural practice: how are we doing? *Journal of Rural Health*. 2000;Winter, 16(1):56-80.
- [84] Geyman JP. Chapter 23 Graduate education for rural practice. In: Geyman JP, Norris TE, Hart LG, eds. *Textbook of Rural Medicine*. New York: McGraw-Hill, 2001:369-80.
- [85] Kamien M. Staying in or leaving rural practice: 1996 outcomes of rural doctors' 1986 intentions. *Medical Journal of Australia*. 1998;169:318-21.
- [86] Hays RB, Veitch PC, Cheers B, Crossland L. Why doctors leave rural practice. *Australian Journal of Rural Health*. 1997;5(4):198-203.
- [87] Australian Medical Workforce Advisory Committee. Influences on participation in the Australian Medical Workforce, AMWAC Report 1998.4. Sydney; 1998.
- [88] Brooks P. The impact of chronic illness: partnerships with other healthcare professionals. *Medical Journal of Australia*. 2003;179:260-2.
- [89] Downton S. Imperatives in medical education and training in response to demands for a sustainable workforce. *Medical Journal of Australia*. 2005;183:595-8.
- [90] Worley P, Prideaux D, Strasser R, Silagy C, Magarey J. Why we should teach undergraduate medical students in rural communities. *Medical Journal of Australia*. 2000;172:615-7.
- [91] Australian Medical Association. Early Streaming Into Specialty Training: AMA Position Statement. Available at: [http://www.ama.com.au/web.nsf/doc/WEEN-6WA7RF/\\$file/AMA_Position_Statement_Early_Streaming_into_Specialty_Training.pdf](http://www.ama.com.au/web.nsf/doc/WEEN-6WA7RF/$file/AMA_Position_Statement_Early_Streaming_into_Specialty_Training.pdf). Accessed 5 March 2007. Canberra: AMA 2006.
- [92] Australian College of Rural and Remote Medicine. ACRRM Submission to the Australian Medical Council for Recognition of the Specialty of "Rural and Remote Medicine". Brisbane: ACRRM; 2004.
- [93] Flynn J. Australian Medical Council, President. Medical Education Towards 2010: Shared Visions and Common Goals; 2005 7-9 March. Available at: <http://www.mededconference.org.au/meded2005/pdf/proceedings.pdf>. Accessed 11 November 2007; Canberra; 2005.
- [94] Lawson K, Chew M, Van Der Weyden M. The new Australian medical schools: daring to be different. *Medical Journal of Australia*. 2004;181:662-6.
- [95] Murray R, Wronski I. When the tide goes out: health workforce in rural, remote and Indigenous communities. *Medical Journal of Australia*. 2006;185(1):37-8.
- [96] Walters L, Worley P. Training in rural practice: Time for integration? *Australian Journal of Rural Health*. 2006;14(5):171-2.
- [97] Van Der Weyden M. Increased medical school places: a crisis in the making? *Medical Journal of Australia*. 2006;185(3):129.
- [98] Medical Training Review Panel. Medical Training Review Panel - First Report. Canberra: DH andFS; 1997.
- [99] Grace K, Bradford C. Community and general practice terms for prevocational junior medical officers: experience and development in South Australia and Western Australia. *Medical Journal of Australia*. 2007;186(7):S28-S30.
- [100] Crotty BJ. More students and less patients: the squeeze on medical teaching resources [Editorial]. *Medical Journal of Australia*. 2005;183(9):444-5.
- [101] Hillman K. The changing role of acute-care hospitals. *Medical Journal of Australia*. 1999;170:325-8.
- [102] McGrath B, Graham I, Crotty B, Jolly B. Lack of integration of medical education in Australia: the need for change. *Medical Journal of Australia*. 2006;184(7):346-8.
- [103] Confederation of Postgraduate Medical Education Councils. Australian Curriculum Framework for Junior Doctors. Available at: <http://www.cpmecorgau/curriculum> Accessed 23 March 2007 2003.

- [104] Nichols A, Worley P, Toms L, Johnston-Smith P. Change of place, change of pace, change of status: rural community training for junior doctors, does it influence choices of training and career? *Rural and Remote Health*. 2004;4:Available at: <http://rrh.deakin.edu.au>. Accessed 11 November 2007.
- [105] Mugford B, Worley P, Braund W, Martin A. Rural intern training. *Rural and Remote Health*. 2001;1 Available at: <http://www.rrh.org.au>. Accessed 11 November 2007.
- [106] University of Western Australia. Handbook: Faculty of Medicine, Dentistry and Health Sciences. Perth: UWA; 2006.
- [107] Thistlethwaite J. Altruism can no longer support community-based training [Letter]. *Medical Journal of Australia*. 2006;185(1):53-4.
- [108] Australian Government Department of Health and Ageing. Practice Incentives Program (PIP). 2007:Available: http://www.medicareaustralia.gov.au/providers/incentives_allowances/pip.shtml. Accessed 26 Apr 2007.
- [109] Department of Health and Ageing. Training for Rural and Remote Procedural General Practitioners Program. Available at: <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/work-rural-trrpgpp>. Accessed November 11 2007.; 2007.
- [110] Australian College of Rural and Remote Medicine. Prevocational General Practice Placements Program (PGPPP). Available at: <http://www.acrrm.org.au/main.asp?NodeID=26571>. Accessed 11 November 2007. Brisbane; 2007.
- [111] Australian College of Rural and Remote Medicine. Vocational Training. Available at: <http://www.acrrm.org.au/main.asp?NodeID=90>. Accessed 11 November 2007. Brisbane; 2007.
- [112] Australian College of Rural and Remote Medicine. John Flynn Placement Program. Available at: <http://www.acrrm.org.au/main.asp?NodeID=194>. Accessed 11 November 2007. Brisbane; 2007.
- [113] Aaraas I, Sorasdekkan H, Kristiansen IS. Are general practitioner hospitals cost-saving: evidence from a rural area of Norway. *Family Practice*. 1977;14(5):397-402.
- [114] Nesbitt TS, Connell FA, Hart LG, Rosenblatt RA. Access to obstetric care in rural areas: effect on birth outcomes. *American Journal of Public Health*. 1990;80(7):814-8.
- [115] Tracy SK, Sullivan E, Dahlen H, Black D, Wang YA, Tracy MB. Does size matter? A population-based study of birth in lower volume maternity hospitals for low risk women. *BJOG*. 2006;113(1):86-9.
- [116] Hein HA. The status and future of small maternity services in Iowa. *JAMA*. 1986;255:1899-903.
- [117] Woollard L. Rural Doctors Association of New South Wales: derived NSW hospital data (unpublished) RDANSW; 2007.
- [118] Phillips WR, Starfield B. Why Does a U.S. Primary Care Physician Workforce Crisis Matter? [Editorial]. *American Family Physician*. 2004;70(3).
- [119] Starfield B. Policy relevant determinants of health: an international perspective. *Health Policy*. 2002;60:201-21.
- [120] Rural Doctors Association of Australia. Federal budget submission 2004-5. Canberra: RDAA; 2003.
- [121] Humphreys J. Equity and distributive justice in non-metropolitan Australia. *10th International Medical Workforce Conference*. Vancouver 2007.
- [122] Mooney G. Inequity in Australian health care: how do we progress from here? *Australian and New Zealand Journal of Public Health*. 2003;27:267-70.
- [123] Browning B. Health Funding and Medical Professionalism - A short historical survey of the relationship between government and the medical profession in Australia. Available at: http://www.aams.org.au/contents.php?subdir=library/history/funding_prof_med_au_andfilename=index. Accessed 30 April 2007; 2000.
- [124] National Centre for Classification in Health. Professional Relative Study Final Report: prepared for Medicare Schedule Review Board. Sydney: NCCH; 2000.

- [125] Healthcare Management Advisors Pty Ltd. Medicare Schedule Review Board: Remuneration Rates Study - Final report. Adelaide: HMA; 2000.
- [126] Medicare Australia. Medicare Benefits Schedule. 2007:Available at: <http://www.health.gov.au/internet/mbsonline/publishing.nsf/Content/Medicare-Benefits-Schedule-MBS-1> Accessed 15 July 2007.
- [127] Australian Government Department of Health and Ageing. Rural Retention Program - Central Payments System. 2006:Available at: <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/work-rural-rrp-cent>. Accessed 26 April 2007.
- [128] Rural Doctors Association of Australia. Viable models of rural and remote practice: Stage 1 and Stage 2 report. Canberra: RDAA; 2003.
- [129] Australian College of Rural and Remote Medicine. Training for Rural and Remote Procedural GPs - Statistics. Brisbane: ACRRM; 2007.
- [130] Lennox D. Queensland Country Practice - Powerpoint presentation 8th August. Brisbane: QH; 2007.
- [131] Rankin S, Hughes-Anderson W, House J, Aitken J, Heath D, Mitchell A, et al. Rural residents' utilisation of health and visiting specialist health services. Rural and Remote Health. 2002;2:Available at: <http://rrh.deakin.edu.au>. Accessed 11 November 2007.
- [132] Royal Flying Doctor Service. RFDS Annual Report 2005. 2006:Available at: <http://www.flyingdoctor.net/ar2005/default.htm>. Accessed 12 May 7.
- [133] Mick S, Wise C. Downsizing and financial performance in rural hospitals. Health Care Management Review. 1996;21(2):16-25.
- [134] Moynihan M. Rural Doctors Association of Victoria data (unpublished): RDAV; 2007.
- [135] Rural Doctors Association NSW. Rural doctors welcome announcement on new rural medical school - Media Release Monday 17th July. Available at: http://www.rdansw.com.au/contracts/RDA_Proposals_for_Rural_Health_for_Parliamentary_Term2007.pdf. Accessed 2 July 2007: RDANSW; 2006.
- [136] Australian Medical Association. AMA Submission to the House of Representatives Standing Committee on Health and Ageing Inquiry into Health Funding - May 2005. Canberra: AMA; 2005.
- [137] House of Representatives Standing Committee on Health and Ageing. The Blame Game: Report on the inquiry into health funding. Canberra: Commonwealth of Australia; 2006.
- [138] Australian Medical Association. Country Hospitals Must be Kept Viable. Media Release 25th July; 2006.
- [139] Van Weel C, Del Mar C. How should GPs be paid? Medical Journal of Australia. 2004;181(2):98-9.
- [140] Wakefield M. Patient safety and medical errors. Implications for rural health care. The Journal of Legal Medicine. 2002 Mar;23(1):43-56.
- [141] Wholey D, Moscovice I, Hietpas T, Holtzman J. The environmental context of patient safety and medical errors. Journal Rural Health. 2004 Fall;20(4):304-13.
- [142] Burstin H, Wakefield M. The importance of safety and quality in rural America. Journal Rural Health. 2004 Fall;20(4):301-3.
- [143] Boland M, Staines A, Fitzpatrick P, Scallan E. Urban-rural variation in mortality and hospital admission rates for unintentional injury in Ireland. Injury Prevention. 2005 Feb;11(1):38-42.
- [144] Eberhardt M, Ingram D, Makuc D. Urban and Rural Health Chartbook. Health, United States. Hyattsville, Maryland: National Center for Health Statistics; 2001.
- [145] Fragar L. Agricultural health and safety in Australia. Australian Journal of Rural Health. 1996 Aug;4(3):200-6.
- [146] Leight SB. The application of a vulnerable populations conceptual model to rural health. Public Health Nursing. 2003 Nov-Dec;20(6):440-8.
- [147] Styner JK. The birth of Advanced Trauma Life Support (ATLS). Surgeon. 2006 Jun;4(3):163-5.
- [148] McConnel F, Pashen D, McLean R. The ARTS of Risk Management in Rural and Remote Medicine. Submitted for publication. 2007.

- [149] Brennan TA, Hebert LE, Laird NM, Lawthers A, Thorpe KE, Leape LL, et al. Hospital characteristics associated with adverse events and substandard care. *JAMA*. 1991 Jun 26;265(24):3265-9.
- [150] Keeler EB, Kahn KL, Bentow SS, United States. Health Care Financing Administration., Rand/UCLA/Harvard Center for Health Care Financing Policy Research. Assessing quality of care for hospitalized medicare patients with hip fracture, using coded diagnoses from the Medicare Provider Analysis and Review files. Santa Monica, CA: RAND 1992.
- [151] Starfield B. Is primary care essential? *Lancet*. 1994;344:1129-33.
- [152] Starfield B. Primary care: concept, evaluation, and policy. New York: Oxford University Press; 1992.
- [153] Benzie D. New South Wales rural general practice from a Yank's perspective. *Australian Journal of Rural Health*. 2003 Jan;11(1):44-6.
- [154] Donahue KE, Ashkin E, Pathman DE. Length of patient-physician relationship and patients' satisfaction and preventive service use in the rural south: a cross-sectional telephone study. *BMC Family Practice*. 2005 Oct 4;6:40.
- [155] Donohoe MT. Comparing generalist and specialty care: discrepancies, deficiencies, and excesses. *Archives of Internal Medicine*. 1998 Aug 10-24;158(15):1596-608.
- [156] Marshall MN. Improving quality in general practice: qualitative case study of barriers faced by health authorities. *British Medical Journal*. 1999 Jul 17;319(7203):164-7.
- [157] Glazebrook R, Chater B, Graham P, Kokar G, Robinson M, Escott R, et al. Evaluation of the ACRRM national radiology program for Australian rural and remote medical practitioners. *Rural and Remote Health*. 2005 Jul-Sep;5(3):349.
- [158] Glazebrook R, Manahan D, Chater AB. Evaluation of an ultrasound program (intermediate obstetric and emergency medicine) for Australian rural and remote doctors. *Australian Journal of Rural Health*. 2005;13(5):295-9.
- [159] Glazebrook R, Manahan D, Chater B. Evaluation of nine pilot obstetric ultrasound education workshops for Australian rural and remote doctors. *Rural and Remote Health*. 2004;4(3).
- [160] Glazebrook R, Manahan D, Chater B, Barker P, Row D, Steele B, et al. Educational needs of rural and remote Australian non-specialist medical practitioners for obstetric ultrasound. *Australian Journal of Rural Health*. 2004 Apr;12(2):73-80.
- [161] Hall A. Evaluation of a Rural and Remote Point of Care Service: Queensland Health; 2003.
- [162] Nelsen DA, Jr., Hartley DA, Christianson J, Moscovice I, Chen MM. The use of new technologies by rural family physicians. *Journal of Family Practice*. 1994 May;38(5):479-85.
- [163] Welch HG, Larson EH, Hart LG, Rosenblatt RA, WAMI Rural Health Research Center. Readmission following surgery in Washington state rural hospitals. Seattle: WAMI RHRC 1991.
- [164] Galandiuk S, Mahid S, Polk H, Turina M, Rao M, Lewis J. Differences and similarities between rural and urban operations *63rd Annual Meeting of the Central Surgical Association*. Louisville, Kentucky 2006.
- [165] Kirby E. Colonoscopy procedures at a small rural hospital. *Canadian Journal of Rural Medicine*. 2004;9(2):89-93.
- [166] Mabo E. Colonoscopy in rural communities. *Journal of the American Board of Family Practice*. 2005 Mar-Apr;18(2):150; author reply -1.
- [167] Newman RJ, Nichols DB, Cummings DM. Outpatient colonoscopy by rural family physicians. *Annals of Family Medicine*. 2005;3(2):122-5.
- [168] Bain NS, Campbell NC, Ritchie LD, Cassidy J. Striking the right balance in colorectal cancer care--a qualitative study of rural and urban patients. *Family Practice*. 2002;19(4):369-74.
- [169] Gonzalez RP, Cummings G, Mulekar M, Rodning CB. Increased Mortality in Rural Vehicular Trauma: Identifying Contributing Factors Through Data Linkage. *Journal of Trauma-Injury Infection and Critical Care*. 2006. August 61(2):404-9.

- [170] Rogers FB, Osler TM, Shackford SR, Cohen M, Camp L, Lesage M. Study of the outcome of patients transferred to a level I hospital after stabilization at an outlying hospital in a rural setting. *The Journal of Trauma*. 1999 Feb;46(2):328-33.
- [171] Veenema KR, Rodewald LE. Stabilization of Rural Multiple-Trauma Patients at Level III Emergency Departments Before Transfer to a Level I Regional Trauma Center. *American College of Emergency Physicians Research Forum*. San Diego, California 1994.
- [172] Chng CL, Collins J, Eaddy S. A comparison of rural and urban Emergency Medical System (EMS) personnel: a Texas study. *Prehospital and Disaster Medicine*. 2001 Jul-Sep;16(3):159-65.
- [173] Dick ML, Schluter P, Johnston C, Coulthard M. GPs' perceived competence and comfort in managing medical emergencies in southeast Queensland. *Australian Family Physician*. 2002;31(9):870-5.
- [174] Hand R, Klemka-Walden L, Inczauskis D. Rural hospital mortality for myocardial infarction in Medicare patients in Illinois. *American Journal of Medical Quality*. 1996 Fall;11(3):135-41.
- [175] Rogers WJ, Canto JG, Barron HV, Boscarino JA, Shoultz DA, Every NR. Treatment and outcome of myocardial infarction in hospitals with and without invasive capability. Investigators in the National Registry of Myocardial Infarction. *Journal of the American College of Cardiology*. 2000 Feb;35(2):371-9.
- [176] Domes T, Szafran O, Bilous C, Olson O, Spooner GR. Acute myocardial infarction: quality of care in rural Alberta. *Canadian Family Physician*. 2006 Jan;52:68-9.
- [177] Middleton S, Harris JP, Sharpe DM, Corbett AJ, Lusby RJ, Ward JE. Improving stroke outcomes in NSW: a study of GP perspectives. *Australian Journal of Primary Health*. 2004;10(2):21-8.
- [178] Cameron B. Outcomes in rural obstetrics, Atherton Hospital 1981-1990. *Australian Journal Rural Health*. 1998 Feb;6(1):46-51.
- [179] Tracey S, Sullivan E, Dahlen H, Black D, Yang Y, Tracey M. Does size matter? A population-based study of birth in lower volume maternity hospitals for low risk women. *BJOG*. 2006;113:86-96.
- [180] Tracy M. The safety of small maternity units in Australia - a population-based study. In: ACRRM and RDAA, editor. *Symposium on birthing services in small rural hospitals*; 2005; 2005.
- [181] Chaska BW, Mellstrom MS, Grambsch PM, Nesse RE. Influence of site of obstetric care and delivery on pregnancy management and outcome. *Journal of the American Board of Family Practice*. 1988 Jul-Sep;1(3):152-63.
- [182] Kriebel SH. Obstetrics in family practice. *Journal of the American Board of Family Practice*. 1992 Nov-Dec;5(6):658.
- [183] Hutten-Czapski P. Family practice maternity care. *Canadian Family Physician*. 1998;44:707-8.
- [184] Tuffnell DJ, Wilkinson K, Beresford N. Interval between decision and delivery by caesarean section are current standards achievable? *Observational case series*. *British Medical Journal*. 2001;322:1330-3.
- [185] Johnson D, Jin Y. Low-volume obstetrics. Characteristics of family physicians' practices in Alberta. *Canadian Family Physician*. 2002 Jul;48:1208-15.
- [186] Craig M, Nichols A. Anaesthesia in rural general practice. *Anaesthesia and Intensive Care*. 1993 Aug;21(4):395.
- [187] Barry AW. Meeting the challenge: providing anesthesia services in rural hospitals. *Canadian Medical Association Journal*. 1995 Nov 15;153(10):1455-6.
- [188] Payne KA, Muller CJ, Coetzee AR. Rural anaesthetic practices in the western Cape. *South African Medical Journal*. 1991 Jul 6;80(1):21-2.
- [189] Gelhorn D. Anesthesia skills for rural family physicians. *Canadian Family Physician*. 2002 Feb;48:324.
- [190] Craig M, Nichols A, Price D. Education for general practitioners proposing to administer anaesthesia in rural general practice. *Anaesthesia and Intensive Care*. 1993 Aug;21(4):432-41.

- [191] Watts R. A Survey Of South Australian Rural General Practitioner Anaesthetists: Training, Skills And Approach To Difficult Anaesthesia: Primary Health Care Research and Information Service (PHCRIS); 1994.
- [192] Watts R. A 5 Year Prospective Analysis of the Efficiency, Safety and Morbidity of Epidural Anaesthesia Performed by a General Practitioner Anaesthetist in an Isolated Rural Hospital. General Practice Evaluation Program (GPEP) Project Summary Project 104 1991 [cited; Available from: <http://www.phcris.org.au/elib/render.php?params=1663>. Accessed 11 November 2007
- [193] European Working Time Directive *Directive*. Europe 2000.
- [194] Australian Medical Association. National Code of Practice - Hours of Work, Shiftwork and Rostering for Hospital Doctors. Kingston, ACT; 2005 February.
- [195] Australian Medical Association. AMA Safe Hours Project - Overview of consultations on the draft national code of practice - hours of work, shift work and roosting for hospital doctors. Kingston, ACT; 1998 December
- [196] Olafsson G, Sigurdsson JA. Out-of-hours service in rural areas. An observational study of accessibility, attitudes and quality standards among general practitioners in Iceland. *Scandinavian Journal of Primary Health Care*. 2000 Jun;18(2):75-9.
- [197] Cuddy NJ, Keane AM, Murphy AW. Rural general practitioners' experience of the provision of out-of-hours care: a qualitative study. *British Journal of General Practice*. 2001 Apr;51(465):286-90.
- [198] Levitt LK. Use it or lose it: is de-skilling evidence-based? *Rural and Remote Health*. 2001 Jan-Dec;1(1):81.
- [199] Australian College of Rural and Remote Medicine. Survey of proceduralists Brisbane ACRRM 2007.
- [200] Runciman WB, Kluger MT, Morris RW, Paix AD, Watterson LM, Webb RK. Crisis management during anaesthesia: the development of an anaesthetic crisis management manual. *Quality and Safety in Health Care*. 2005 Jun;14(3).
- [201] Runciman WB, Merry AF. Crises in clinical care: an approach to management. *Quality and Safety in Health Care*. 2005 Jun;14(3):156-63.
- [202] Runciman WB, Webb RK, Klepper ID, Lee R, Williamson JA, Barker L. The Australian Incident Monitoring Study. Crisis management--validation of an algorithm by analysis of 2000 incident reports. *Anaesthesia and Intensive Care*. 1993 Oct;21(5):579-92.
- [203] Langeron O, Amour J, Vivien B, Aubrun F. Clinical review: management of difficult airways. *Critical Care*. 2006;10(6):243.
- [204] Australian Council for Safety and Quality in Health Care. Standard for Credentialling and Defining the Scope of Clinical Practice. Canberra; 2004.
- [205] Wolff AM, Bourke J, Campbell IA, Leembruggen DW. Detecting and reducing hospital adverse events: outcomes of the Wimmera clinical risk management program. *Medical Journal of Australia*. 2001 Jun 18;174(12):621-5.
- [206] Moscovice I, Wholey DR, Klingner J, Knott A. Measuring rural hospital quality. *Journal Rural Health*. 2004 Fall;20(4):383-93.
- [207] Podger A. A model health system for Australia. *Inaugural Menzies Health Policy Lecture*. Canberra 2006.
- [208] Bidwell S. Successful Models of Rural Health Service Delivery and Community Involvement in Rural Health: International Literature Review. Centre for Rural Health: Christchurch, New Zealand.; 2001.
- [209] Wakerman J, Humphreys J, Wells R, Kuipers P, Entwistle P, Jones J. A Systematic Review of Primary Health Care Delivery Models in Rural and Remote Australia 1993-2006. Canberra: ANU College of Medicine and Health Sciences; 2006.
- [210] Murdoch C. Making it pay and helping us stay: the viability of a rural general practice in New Zealand. *New Zealand Medical Journal*. 2006;119(1246):1-9.
- [211] Sedgwick D. Remote Area Surgery: Personal perspectives on the future of remote and rural medicine in Scotland - A series of commissioned commentaries: Royal College of Physicians of Edinburgh; 2005.

- [212] Ettelt S, Nolte E, Mays N, Thomson S, McKee M. Health care outside hospital: assessing generalist and specialist care in eight countries. Copenhagen: WHO Regional Office for Europe; 2006.
- [213] Council of Australian Governments. Health Workforce. Available at: <http://www.coag.gov.au/meetings/130407/index.htm#health>. Accessed 13 May 2007; 2007.
- [214] Topps D, Rourke J, Newbery P. Wanted: trainees for rural practice. *Australian Journal of Rural Health*. 2003;11(2):96-8.
- [215] Breon TA, Scott-Connor CE, Tracey RD. Spectrum of general surgery in rural Iowa. *Current Surgery*. 2003;60(1):94-9.
- [216] Health Workforce Queensland. Solutions to the provision of primary care to rural and remote communities in Queensland. Brisbane: HWQ; 2005.
- [217] Rosewarne C, Boffa J. An analysis of the primary health care access program in the Northern Territory - a major Aboriginal health reform. *Australian Journal of Primary Health*. 2004;10(3).
- [218] Hunter A, Mayers N, Couzos S, Daniels J, Murray R, Bell K, et al. Aboriginal community controlled health services. *General Practice in Australia 2004*. Canberra: Australian Government Department of Health and Ageing 2005:p. 337-58.
- [219] Agency for Healthcare Research and Quality. Telemedicine for the Medicare Population. Rockville, MD; 2001 February. Report No.: 24.
- [220] Rogers FB, Ricci M, Caputo M, Shackford S, Sartorelli K, Callas P, et al. The use of telemedicine for real-time video consultation between trauma center and community hospital in a rural setting improves early trauma care: preliminary results. *The Journal of Trauma*. 2001 Dec;51(6):1037-41.
- [221] Ricci MA, Caputo M, Amour J, Rogers FB, Sartorelli K, Callas PW, et al. Telemedicine reduces discrepancies in rural trauma care. *Telemedicine Journal and E-Health*. 2003 Spring;9(1):3-11.
- [222] Rischbieth P. Information technology *RDAA/ACRRM Emergency Medicine Symposium*. Albury 2007.
- [223] Buchan J, Calman L. Skill-Mix and Policy Change in the Health Workforce: Nurses in Advanced Roles. OECD Health Working Papers Number 17. 2004.
- [224] Hooker RS, Crawley JF. *Physician Assistants in American Medicine*. NY: Churchill Livingstone 2003.
- [225] Society of Obstetricians and Gynaecologists of Canada, College of Family Physicians of Canada, Society of Rural Physicians of Canada. Number of births to maintain competence. *Canadian Family Physician*. 2002 Apr;48:751, 8.

APPENDIX A – METHODS

THE SEARCH STRATEGY

ELECTRONIC DATABASE SEARCHES (BLACK LITERATURE)

To identify relevant peer-reviewed literature systematic searching of a number of health related databases was conducted. The searches were carried out by the librarian who was a part of the team. The databases searched included Medline, CINAHL, EMBASE, the Cochrane Library, ADT - Australian Digital Thesis Program, Proquest Digital Dissertations, and the INFORMIT suite of databases including: AMI - Australasian Medical Index, APAIS - Australian Public Affairs Information Service, APAIS-Health - Australian Public Affairs Information Service - Health, ATSIhealth - Aboriginal and Torres Strait Islander Health Bibliography, H andS - Health and Society Database and RURAL - Rural and Remote Health Database.

The search terms were selected through discussion of the topic areas and through the initial searching process to understand what terms are most meaningful according to the databases. The searches were modified according to the database and the search functionality available in each.

The searches were inclusive and did not exclude any date range or type of publication, but a limitation of English language was included due to time and funding limitations. The searches excluded developing countries. Australia and countries in which similar conditions existed (Primarily the USA and Canada) were chosen as appropriate settings.

Initial searches were specific, using headings and core terminology and then broadened to ensure that a wide array of literature was included. The results were compiled into an Endnote library, which allowed for easy de-duplication.

GREY LITERATURE

Grey literature was identified through resources already known to researchers, ACRRM internal resources, references from literature already identified and searches of government departments, rural and professional organisations, educational institutions and related bodies. The internet was also searched for relevant resources using a number of browsers and scholarly search engines. Searches were performed using a variety of key terms coming out of discussions and prior database searches. As further details were ascertained further grey literature searches were performed. Site searches and browsing were used with identified organisations to identify relevant publications.

The grey literature was also added into an Endnote library as a part of the screening process.

SNOWBALLING

The retrieved literature provided valuable clues to other sources available and provided a number of additional references. Each document was scanned for references to both published and unpublished literature.

ADJUDICATING RETRIEVED MATERIALS

References were reviewed by two teams of reviewers for the two stages of assessment. The initial team would review the references based on the abstract and title of the search results. If consensus was achieved the article would then move to the next two reviewers.

In situations where there was insufficient information from the abstract the article was obtained and then considered for inclusion. In situations in which there was disagreement on inclusion this fact would be noted and it would then move to the next group of reviewers.

The second round of review involved reviewing the print copy of the article. Once agreement had been obtained on the articles they were added to the Endnote library of master documents for inclusion.

INCLUSION CRITERIA

The inclusion criteria for the retrieved literature included the following:

- The article related to the rural context.
- The preference was for the Australian setting
- The article related to one of the questions relating to Generalism
- The setting location of the article is appropriate to local conditions
- The article was specifically about general physicians.

EXCLUSION CRITERIA

The publication was excluded if it contained any of the following:

- The title and/or abstract indicated that the article had no relevance to the review topic
- The article was located in an unrelated setting
- The article focussed on a specialist role.

RESULTS

The results of the literature searches of the databases, grey literature and the snowballing process provided over 4000 references. The first review of the results provided 1533 references. By the second review this was reduced to 403 results. The final number included in the review was 166 references.

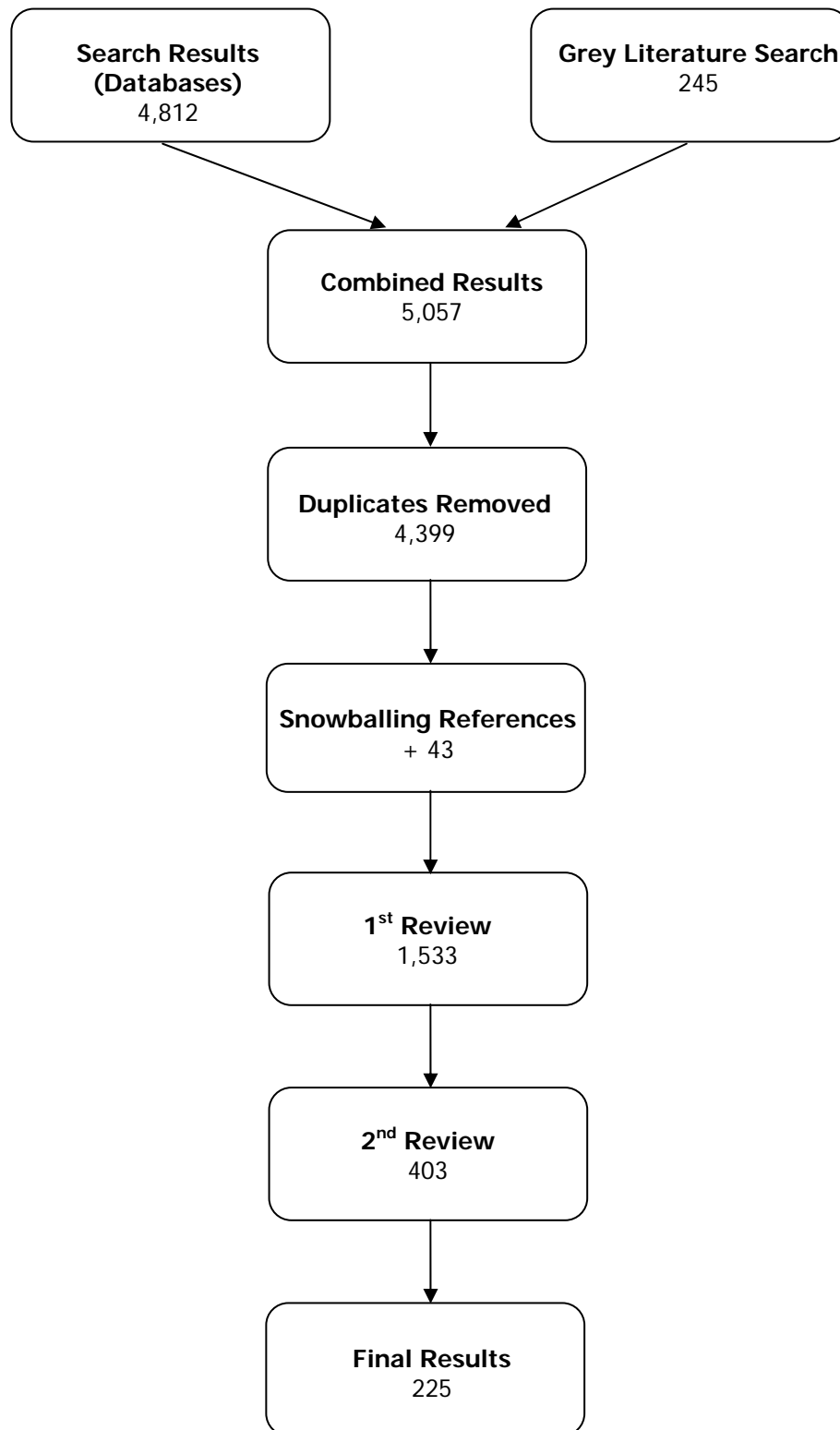
Each of the references was assigned an area of relevance to the review based on the questions developed and they were organised by the type of literature they represented. If there was any data associated with the article this would be highlighted as well.

LIMITATIONS OF THE REVIEW

QUALITY OF THE ARTICLES

Due to the nature of the questions the majority of the literature identified for the review consisted of comparative studies, descriptive literature and reports.

OVERVIEW OF INCLUDED STUDIES



ORIGINAL SEARCH RESULTS

OID MEDLINE

1	exp Rural Health/	17,550
2	exp Rural Health Services/	5,028
3	exp Rural Population/	25,552
4	exp Hospitals, Rural/	3,049
5	rural.mp.	68,867
6	exp Medically Underserved Area/	3,581
7	remote.ti.	6,991
8	1 or 2 or 3 or 4 or 5 or 6 or 7	77,450
9	exp Family Practice/	51,170
10	(family practice or family medicine).tw.	8,906
11	(family physician\$ or family doctor\$ or family practitioner\$).tw.	10,724
12	exp Physicians, Family/	11,106
13	(general practi\$ or gp\$ or general physician\$).tw.	105,187
14	generalis\$.mp.	10,931
15	or/9-14	156,652
16	8 and 15	4,174
17	developing countr\$.mp. [mp=title, original title, abstract, name of substance word, subject heading word]	59,037
18	exp Developing Countries/	48,640
19	17 or 18	59,037
20	16 not 19	4,125
21	20	4,125
22	limit 21 to english language	3,755
	Total	3,755

INFORMIT

DATABASES

AMI - Australasian Medical Index Information 1968 - present
 APAIS - Australian Public Affairs Information Service Information 1978 - present
 APAIS-Health - Australian Public Affairs Information Service - Health Information 1978 - present
 ATSIhealth - Aboriginal and Torres Strait Islander Health Bibliography Information 1900 - present
 H andS - Health and Society Database Information 1980 - present
 RURAL - Rural and Remote Health Database Information 1966 - present.

Rural or Remote or Hospitals Rural or Rural Health or Rural Health Services or Rural Population
 = TI Subject or Abstract AND
 family practi* or family physician* or general practitioner or general practice or family medicine
 or primary care or Generalist* or generalism* or Physician* = TI Subject or Abstract AND
 Education* or train* or policy or certif* or renum* or pay* or skill or Barrier* or Support* or
 Job Satisfaction* or Challenge* or Competence or role* or quality or standard*
 Total 741
 1,150 - 409 duplicates

CINAHL (EBSCOHOST)

S1 ((MM "Rural Health Personnel") or (MM "Rural Health Centers") or (MM "Rural Areas") or (MM "Rural Health") or (MM "Rural Health Services"))	Results (3,643)
S2 (MM "Physicians")	Results (6,711)
S3 (MM "Family Practice")	Results (2,217)
S4 (S2 or S3)	Results (8,878)
S5 (S4 and S1)	Results (129)
Total	129

EMBASE (EMBASE.COM)

8 4 AND 7	134
7 5 OR 6	10,966
6 'family medicine'/mj AND [embase]/lim AND [1966-2007]/py	2,351
5 'physician'/mj AND [embase]/lim AND [1966-2007]/py	8,645
4 1 OR 2 OR 3	4,739
3 'rural population'/mj AND [embase]/lim AND [1966-2007]/py	1,138
2 'rural area'/mj AND [embase]/lim AND [1966-2007]/py	1,645
1 'rural health care'/mj AND [embase]/lim AND [1966-2007]/py	134
Total	134

COCHRANE (WILEY)

1 MeSH descriptor Hospitals, Rural explode all trees	34
2 MeSH descriptor Rural Health explode all trees	307
3 MeSH descriptor Rural Health Services explode all trees	171
4 MeSH descriptor Physicians, Family explode all trees	298
5 MeSH descriptor Family Practice explode all trees	1,756
6 (4 OR 5)	2,013
7 (family practi* or family physician* or general practitioner or general practice or family medicine or Generalist or generalism or Physician*):ti	3,178
8 (Rural or Remote or Hospitals Rural or Rural Health or Rural Health Services or Rural Population):ti	683
9 (1 OR 2 OR 3)	504
10 (6 OR 7)	4,193
11 (8 OR 9)	952
12 (11 AND 10)	53
Total	53

SOURCES FOR GREY LITERATURE

Australian Institute of Health and Welfare (AIHW)
 Australian Rural and Remote Workforce Agencies Group (ARRWAG)
 Australian College of Rural and Remote Medicine (ACRRM)
 British Library
 Canadian Health Services Research Foundation
 Canadian Rural Health Research Society
 Canadian Rural Information Service
 Computer Retrieval of Information on Scientific Projects (CRISP)
 Database for rural health research in progress (Can/US)
 European Rural and Isolated Practitioners Association (EURIPA)
 Flinders University Rural Clinical School
 GrayLIT Network
 Health Research Projects in Progress
 Health Resources and Service Administration – Rural Health Policy
 Health Services/Technology Assessment Text

Health Technology Assessment Database
Institute of Rural Health
International Association of Agricultural Medicine and Rural Health
Libraries Australia
National Library of Medicine's LocatorPlus
National Research Register
The National Rural Health Alliance
National Rural Health Association (NRHA) Annual Conference (United States of America)
National Rural Health Conferences
National Technical Information Service
New York Academy of Medicine Gray Literature Report
North Carolina Rural Health Research Program
Primary Health Care Research and Information Service
Royal Australian College of General Practitioners [RACGP] - Rural Faculty
Rural Doctors' Association of Southern Africa (RuDASA)
Rural Information Center Health Service
Services for Australian Rural and Remote Allied Health (SARRAH)
School of Rural Health (Monash University)
Virtual Technical Reports Center, University of Maryland Libraries
World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA)
United States Department of Agriculture
World Rural Health 2002
WWAMI Rural Health Research Center (RHRC)

SEARCH ENGINES

GOOGLE
GOOGLE Scholar
SCIRUS
VIVISIMO

APPENDIX B – REMOTENESS CLASSIFICATIONS

Broad Category	RRMA			DoHA ARIA			ASGC Remoteness		
	Fine Category	Population (000,000)	%	Category	Population (000,000)	%	Category	Population (000,000)	%
Metropolitan	Capital Cities	11.6	64	Highly Accessible	14.9	81	Major Cities	12.1	66
	Other Metropolitan centres	1.4	8						
Rural	Large Rural centres	1.1	6	Accessible	2.2	12	Inner Regional	3.8	21
	Small Rural centres	1.2	7				Outer Regional	2.0	11
	Other Rural centres	2.4	13				Moderately Accessible	0.8	4
Remote	Remote centres	0.2	1	Remote	0.2	1	Remote	0.3	0.3
	Other Remote areas	0.3	2	Very Remote	0.2	1	Very Remote	0.2	0.2
							Migratory	<0.1	

Note: This table is a guide only; the various classes in each classification are not equivalent.
Sources: AIHW Population Estimates; AIHW Australia's Health 2002 [54].

APPENDIX C – CALCULATING PRACTICE INCENTIVE PAYMENTS: THE FORMULA IN BRIEF

Element	Aspect or Activity	Annual Payments per Standardised Whole Patient Equivalent (SWPE) ¹
1. IM/IT	Tier 1 - Providing data to the Australian Government	\$3.00
	Tier 2 - Use of bona fide electronic prescribing software to generate the majority of scripts in the practice	\$2.00
	Tier 3 - The practice has on site and uses a computer/s connected to a modem to send and/or receive clinical information	\$2.00
2. After hours care**	Tier 1 - Ensuring patients have access to 24-hour care as specified in the application form	\$2.00
	Tier 2 - On average, the practice covers at least 15 hours per week of its after hours care from within the practice	\$2.00
	Tier 3 - The practice provides 24-hour care from within the practice	\$2.00
3. Teaching	Teaching of medical students	\$100 per session (Max 2 sessions per day)
4. Quality Prescribing Initiative	Practice participation in quality use of medicines programs, endorsed by the National Prescribing Service	\$1.00
5. Diabetes	Register Payment: Once-off payment for notifying the Australian Government that the practice uses a diabetes register and recall/reminder system.	\$1.00
	Service Incentive Payment: Payment for each annual cycle of care for a patient with diabetes, payable once per year per patient.	\$40 per diabetic
	Outcomes Payment: Payment to practices that complete an annual program of care for a target proportion of their patients with diabetes.	\$20 per diabetic
6. Asthma	Sign-on Payment: Payment to practices that agree to provide data to the Australian Government.	\$0.25
	Service Incentive Payment: Payment to practitioners who complete an Asthma 3+ Visit Plan for patients with moderate to severe asthma, payable once per year per patient.	\$100
7. Cervical Screening	Sign-on Payment: Payment to practices that agree to provide data to the Australian Government.	\$0.25
	Services Incentive Payment: Payment to	\$35

	practitioners for screening women between 20 and 69 years who have not had a cervical smear within the last four years. Outcomes Payment: Payment to practices where a specified proportion of women ages between 20 and 69 years has been screened in the last 24 months.	\$2.00 per female SWPE aged between 20 and 69
8. Practice Nurses	Payment to PIP practices that employ or retain the services of a practice nurse and are located in the target area.	RRMA's 1-2: \$8 per SWPE RRMA's 3-7: \$7 per SWPE
9. Mental Health	Sign-on Payment: Once-off payment to individual general practitioners who register for the incentive. Service Incentive Payment: Payment to practitioners on completion of the 3 step mental health process.	\$150 \$150
10. Rurality	The practice's main location is outside metropolitan areas (increases with extent of remoteness)	15% to 50% loading of total payment.

1 The average FTE GP sees 1,000 SWPEs annually.
Source: Medicare Australia [126].

APPENDIX D – THE ARTS OF RURAL AND REMOTE MEDICINE

(ASSESSMENT, RESOURCES, TRANSPORT, SUPPORT)

RISK IDENTIFICATION	P	Dr	C
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P=patient Dr=doctor C=community

Assessment (*situational analysis*)

Complexity What risk of error does the clinical context and complexity result in? For example, is the clinical context acute or chronic, what speed of clinical response is required, are the diagnoses and treatment straight forward or are multiple steps required? Are there complex communication needs?			
Socio-economic factors What risk will there be to the patient/family and community in relation to dislocation, cost, income and productivity?			
Cultural and psychological factors This risk relates primarily to those resulting from the patient and community's belief systems around illness, treatment and expectations, and around communication. For the doctor, it is around medico-legal risk, and the pressures on management decisions from non-clinical sources.			
Public health issues This relates to infection control, occupational or environmental health issues, health promotion activities, and to risk to doctor, family and team from contagious illness.			

Resources

Human Given the available local human resources, what risk is there for the patient in this clinical context? Will safety for patients, practitioners, and the community be compromised by the demands of this case on local resources?			
Advice and information Is the availability of clinical information and specialist advice in this context adequate for patient safety or doctor support?			
Technical What risk is there for the patient in this clinical context given the physical infrastructure (facilities, communications, etc)?			

Transport

Additional risks What additional risk is there for the patient, doctor and other health personnel in this clinical context if transport is required?			
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Support

Psychological What are the risks to the patient and family, doctor, team and family, and community in this clinical context given the psychological (and professional) supports available to each?			
Management and organisational Are there systems in place which support the management of this case, or are they a barrier? Is the local (and distant) management supportive and enabling, or is it a battle to manage this case in the patient's best interest?			

Source: McConnel F, Pashen D, McLean R. The ARTS of Risk Management in Rural and Remote Medicine. *In press* 2007 [148].

APPENDIX E – SOGC CONSENSUS STATEMENT

The following is reproduced from a consensus statement by the Society of Obstetricians and Gynaecologists of Canada, the College of Family Physicians of Canada, and the Society of Rural Physicians of Canada:

The belief that attending a specific number of births can imply a competence threshold for all providers fails to take into account several important variables. These include: the stage of a provider's career (early, middle, or approaching retirement), and hence the value of accumulated experience; the shared experience of the members of a practice group; well-developed collegial relationships among family physicians, specialists, and sub-specialists; the practice setting and organization; and the use of risk management and/or quality assurance programs. Although the literature clearly supports volume thresholds for complex surgical and some rare medical conditions,^{1,2} there is no evidence to support the extrapolation of these volume concepts to normal pregnancy and newborn care.² Rather, findings demonstrate good outcomes in low-volume settings when access to specialist consultation and timely transfer is available and used appropriately.³⁻⁹ In light of this evidence, the Society of Obstetricians and Gynaecologists of Canada, the College of Family Physicians of Canada, and the Society of Rural Physicians of Canada affirm that competence in obstetric care is not dependent on the number of births attended annually. Maintaining competence in all elements of practice is the professional responsibility of every practitioner. Maintaining competence depends on an appropriate, ongoing, and self-directed program of continuing professional development, which should be structured to the needs and responsibilities of the individual and practice group. This program may include, but is not limited to, consultation with colleagues, attendance at meetings and courses, and participation in special workshops, such as Advances in Labour and Risk Management (ALARM) and Advanced Life Support in Obstetrics (ALSO) provider courses. Maintaining hospital privileges to provide intrapartum care should be based on locally determined quality assurance programs and on individual participation in self-directed maintenance of competence programs. Requiring attendance at a minimum number of births should not be an element of any credentialing program.

(This SOGC Policy Statement replaces SOGC Policy Statement No. 58, November 1996) [225].