

Specialist adult physicians in the Top End of the Northern Territory: An analysis of their number and roles

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Abstract

The optimal way of delivering specialist services to rural and remote Australia, and particularly to remote Aboriginal and Torres Strait Islander communities, is a matter of keen debate at present, and is being considered by the Australian Medical Workforce Advisory Committee. This paper contributes to that debate by considering one specialist medical group, namely adult physicians, and discusses both their role and optimal number in the Top End of the Northern Territory, in light of the general workforce literature and recent changes to the organisation of physician services in the Northern Territory. Models of specialist service delivery need to be explicit, and organisational methods transparent, if the service is to be equitable, flexible and accountable to primary care practitioners.

Introduction

Medical practitioners doing clinical work in Australia are, for the most part, either general practitioners or specialists. Specialists are identified either by technique (for example, surgeons), body part (for example, ophthalmologists) or target population (for example, paediatricians). Specialist physicians in adult or 'internal' medicine care for adults and have a particular postgraduate training that emphasises 'internal' physiology and pathology of the human body, diagnostic reasoning, and management skills, in particular the rational use of medications. Specialist adult physicians are either specialists in general internal medicine (so-called 'general physicians') or subspecialists in a particular area (for example, cardiologists). The activities of subspecialists are defined, in general, by the

particular organ or system that they have studied in great depth, whereas general physicians have a 'better than average' working knowledge of multiple organ systems (Bolitho 1997) and are trained to provide an holistic opinion on often complex patients, not limited by the boundaries of medical subspecialties. The importance of maintaining a role for general physicians, rather than relying wholly on subspecialists, has been argued at length by representatives of the Royal Australasian College of Physicians (Cohen 1994). Despite this, the number of general physicians in training and clinical practice in Australia is declining (Dent 1994, 1997). All specialist physicians see only patients referred by general practitioners.

This paper poses the question: What is the optimal role and number of specialist adult physicians (henceforth referred to as physicians) in the Top End of the Northern Territory, taking into account national patterns and local needs? In order to answer this question, we will first examine the methods available to estimate the optimal number of physicians in any area. Recent changes to the organisation of physician services in the Top End will then be described to draw out the possible implications for the reorganisation of specialist services in general.

Four approaches to estimating the optimal number of physicians in rural areas

All analyses of professional distribution across urban, rural and remote locations are bedevilled by problems of definition. It is hard to estimate accurately the number of resident and visiting providers, their hours of work and the balance of their work; there are disagreements about what constitutes a 'rural' and 'remote' area; and there are difficulties with obtaining accurate population estimates in these areas. Even if an accurate picture of physician distribution could be produced, the question as to what constitutes an *optimal* distribution remains problematic. It should be borne in mind that there are no data which prove that more physicians per head produce better health outcomes, or whether a threshold number exists, below which health outcomes are poorer.

A reading of the workforce literature suggests that there are four main approaches to estimating optimal numbers of physicians. The first is the most obvious, and still the most widely utilised. This method is to use raw numbers of providers and populations to calculate a *provider to population ratio* or, alternatively, a *rate*, that is, number of providers per 100 000 population. *Location quotients* can also be calculated from raw numbers by dividing the provider to population ratio in one location by the overall ratio across all locations, giving a simple measure of

apparent shortfall or excess supply compared to the average. Such calculations most often fail to take into account full-time or part-time work (so-called 'effective workforce participation'), the role of visiting professionals, skills substitution (for example, general practitioners performing procedures that would usually be performed by specialists elsewhere), and the different needs of particular settings and particular client groups.

In 1993 Australia's population was estimated at 17.5 million, of whom 28 per cent lived in rural and remote areas. There are approximately 44 000 doctors in Australia (Australian Medical Workforce Advisory Committee 1996a), two-thirds of whom are general practitioners and one-third specialists (Harris 1992). Twenty per cent of general practitioners and 12 per cent of specialists live in rural and remote areas (Australian Medical Workforce Advisory Committee 1996b). There is a disparity of medical practitioners per head of population, with a gradient from capital cities to rural areas with fewer practitioners, fewer services per person, but more services per practitioner in rural areas (Australian Medical Workforce Advisory Committee 1996a). This gradient applies to specialists (Harris 1992) and to specialist physicians in particular (Gadiel & Ridoutt 1994, Table 2.4, p 19, Table 2.13, p 28).

Gadiel and Ridoutt's report (1994) did correct for effective workforce participation. However, this report grouped the Northern Territory in with South Australia, so it is of limited local relevance. What is of relevance to the Northern Territory is their conclusion *that resident specialists are better than visitors, provided caseloads can justify at least two full-time equivalent specialists of the same discipline*. Gadiel and Ridoutt also promoted the idea of structured devolution of specialist services through organisational change and pointed out that location decisions of specialists as to metropolitan or rural practice appeared to be highly inelastic with respect to income and price. As a result, they concluded, direct financial incentives would be unlikely to redress the maldistribution of the specialist workforce.

Dent has published two extensive surveys on the Royal Australasian College of Physicians' workforce (Dent 1994, 1997). These two reports dealt with workforce data from 1993 and 1995 respectively. He showed that the Northern Territory, in 1995, had the highest number of general physicians per adult person in the country (1 general physician to 21 000 people, compared to 1 general physician to 32 200 nationally), but the lowest number of specialist adult physicians, that is, general physicians and subspecialists combined (1 physician to 15 800 people, compared to 1 to 5300 nationally). This was because at the time most physicians in the Northern Territory were working primarily as general physicians rather than subspecialists.

The second methodological approach is a qualitative one and involves asking stakeholders to nominate an optimal number of specialists. This could be called a *demand-based approach*. The two groups most approached to provide opinions about the adequacy of specialist supply are general practitioners (Kamien 1995) or consumers.

The as yet unpublished Report of the Royal Australasian College of Physicians' Committee on the Provision of Services in Internal Medicine to Rural and Remote Australia (Dr Ian Smee, personal communication, 10 July 1996) has supported the combination of quantitative and qualitative approaches to physician workforce assessment and outlined a specific process of assessment. The first step involves the identification of non-metropolitan centres of 20 000 people or more, where there is less than one physician per 10 000 people. This assessment process is based on the concept that there should be a minimum of two physicians in any one area to provide peer support. The second step recommended is to ask local physicians (if any) in such areas whether they agree that there is a need for more local physicians.

The third methodological approach is to use *utilisation data* (for example, Medicare claims for specialists across different regions) to identify areas where specialist claims seem to be underutilised. Gadiel and Ridoutt (1994, p 33) analysed Medicare claims data for various specialties across different regions. They found a utilisation rate up to ten times lower in rural and remote locations compared to urban locations. The Baume report into Australia's surgical workforce (1994) used provider:population ratios, but also used waiting lists as a proxy for unmet need. This could be called non-utilisation data! However, there are major concerns about data quality with respect to Medicare utilisation data and waiting lists and it is not known whether such data reflect needs or supply factors (numbers of practitioners), styles of practice (for example, public or private employment, hospital or community-based services) or demand (which may be justified or unjustified). If it is unclear what utilisation is measuring, then there is little way of knowing what level of utilisation is optimal.

The fourth approach to estimating optimal workforce requirements which does not yet seem to have been adopted in Australia is a *needs-based* one (Pathman 1991), which would incorporate population characteristics (such as the age of a population) and present health outcomes (such as the morbidity and mortality of a population). Perhaps this approach has not been used because it is not known what level and types of intervention (including workforce supply factors) need to be applied to meet best practice standards and rural health goals and targets. This approach could, however, be most valuable in areas of special need, such as the Northern Territory.

It should be noted that, since 1995, the Medical Workforce Data Review Committee and related committees have been replaced by the Australian Medical Workforce Advisory Committee reporting to the Australian Health Ministers' Advisory Committee (Douglas 1995). This committee will report on medical workforce supply, distribution, education, training and financing as well as models and tools to describe and manage the workforce. It has also set up a subcommittee, the Rural and Remote Areas Medical Workforce Working Party. A developing emphasis of the Australian Medical Workforce Advisory Committee seems to be on setting benchmarks for predicting and monitoring optimal workforce size, through reference to the literature on workforce numbers in other developed countries, and through an assessment of rural undersupply and urban oversupply within Australia. The process by which these benchmarks are set is obviously subject to some methodological debate, but at least the process is becoming explicit. It should be remembered that all national benchmarks assume a uniform distribution of medical services in relation to need across areas of service, which is not the case at present. Between and within regions, the Inverse Care Law seems to apply. The greater the need for specialists in general, and physicians in particular, the less the supply; and conversely, the less the need, the greater the supply.

The Top End of the Northern Territory

The Top End of the Northern Territory is a unique setting for health care delivery. It is made up of Darwin, Katherine and East Arnhem Regions. The total population was only 133 000 people at the 1991 census (Australian Bureau of Statistics 1992) but this number is dispersed widely over an area of 670 000 square kilometres, two-thirds of the size of New South Wales. There is a large Aboriginal and Torres Strait Islander population, approximately 27 000 from the 1991 census, two-thirds of whom live in rural and remote areas, in 42 separate communities.

Aboriginal and Torres Strait Islander people have the worst health status of any identifiable group in the country and eight of the ten regions in the whole of Australia with the highest mortality rates are in the Northern Territory (Jain 1994, Table 17A, p 57). There are well-recognised cross-cultural issues that affect health care delivery, including some resistance to the idea of travelling to Darwin purely for a specialist opinion. There is an undersupply of primary care practitioners of all kinds and a high turnover of primary care doctors. There are a small number of resident primary care doctors (supported in part by the Rural Incentives Program) but the majority of communities are served by visiting district medical officers. There are no resident specialists of any kind outside

Darwin. It is known that Aboriginal and Torres Strait Islander people underutilise medical services relative to their need (Mathews 1996). The question in the Northern Territory is not how to cap demand, but how to increase it, and how to pay for it.

Physician numbers in the Top End

In order to assess whether there is more or less than the average number of physicians in the Top End (leaving aside for the moment any consideration that the population needs are greater), an approximate calculation will be made as to the number of physicians that would be expected in an average Australian population of 133 000 people. In 1993 Australia had 226 medical practitioners per 100 000 people (Australian Medical Workforce Advisory Committee 1996a). This figure includes all those licensed to practise clinical medicine. Harris (1992) estimated that there were two general practitioners for every one specialist. If these figures are applied to a population base of 133 000 people, 196 general practitioners and 98 specialists would be expected. Specialist adult physicians and paediatricians together constitute approximately 23 per cent of the specialist workforce (Gadiel & Ridoutt 1994, Table 2.2, p 18), so for every 98 specialists one would expect 23 physicians and paediatricians. There are slightly less than four adult physicians to every one paediatrician (Dent 1997), so for every 23 physicians and paediatricians one would expect 18 specialist adult physicians and five paediatricians. Subspecialists outnumber general physicians in a ratio of 5:1 (Dent 1997), so for every 18 specialist adult physicians one would expect 15 subspecialists and three general physicians.

So what is the actual situation? In mid-1996 there were 12 qualified specialist adult physicians (7.5 full-time-equivalent physicians) in the Top End rather than the expected 18. All were based in Darwin. There were four who trained in the subspecialty of infectious diseases, but who worked predominantly as general physicians, two nephrologists (one of whom worked mainly as a researcher), and generalists with interests in diabetes, neurology, gastroenterology, haematology and oncology. There was also one senior registrar and three advanced trainees working at Royal Darwin Hospital. Interstate visiting subspecialty services included cardiology, neurology, palliative medicine/radiation oncology, rheumatology and pain management.

So, overall, there were fewer resident physicians than may have been expected, with more generalists and fewer subspecialists, but to balance this, there were a number of regular visiting subspecialists. These observations support the statistical data in Dent's report (1994). Darwin is one of the last bastions of general physicians in the country, though an increasing number have subspecialty

training. Indeed, since mid-1996, and with the opening of the Flinders Medical School at Royal Darwin Hospital, a cardiologist has been appointed, as well as a subspecialist in respiratory medicine (who also works in a general medical unit and has an academic role).

Demand for services and reorganisation of physician services

In order to assess demand for physician services, a questionnaire was sent out in early 1996 to resident general practitioners, and visiting district medical officers with responsibility for primary care services, asking them to state their requirements regarding physician visits. The response was uniform. Visits were requested from communities without visiting physicians, regular visits were requested if current visits were irregular, and more frequent visits were requested if current visits were regular. This process identified three large communities in the Darwin Region without visiting physicians.

Primary care practitioners stressed that the most important part of a visiting physician service was continuity of care and predictability of service. The three specialist groups most needed for community visits seemed to be general physicians, general paediatricians and ophthalmologists (an urgent requirement). Other specialists could be accessed through sending patients to a central location.

Following this consultative process, a roster was created that formally allocated physicians to specific communities. The roster includes all full-time general physicians and subspecialists working in Darwin. All rural and remote communities, urban community-controlled health services and regional hospitals in the Top End now have allocated physicians. By allocating specific physicians to specific places, it is hoped to provide the continuity of care so desired by referring practitioners.

At the end of 1995 there were five specialist adult physicians regularly visiting rural and remote communities in the Top End of the Northern Territory, in addition to their normal hospital and private duties, out of a total of ten registered physicians (six full-time-equivalent physicians). By mid-1996 the number of visiting physicians had increased to ten (by virtue of two new arrivals, two Darwin physicians deciding to take up a visiting role and one physician recommencing practice after a period doing policy work) out of a total of 12 adult physicians (7.5 full-time-equivalent physicians).

In order to maintain the emphasis on a general physician service, the physicians with subspecialist training have been requested to act more as general physicians when visiting communities, rather than concentrating on their subspecialty. Of

course, their subspecialty expertise may well prove useful. Each visiting physician has also been asked to negotiate directly with the primary care practitioner regarding the frequency and length of their visits. In such a way, local factors can be incorporated into planning visits, rather than an arbitrary decision being made (say, on the basis of community size) as to how often a physician should visit. All physicians have been asked to let community health centres know their visiting schedule, as far ahead as possible, so that adequate planning and coordination can take place. There are potential cost savings if patients can also utilise the transport to and from town that has been booked for the visiting specialists.

It is felt that the involvement of the majority of physicians on the roster will improve the cohesion of the specialist adult medical service, improve the hospital–community interface, and lead to achievable and shared physician loads. A single community physician can coordinate and participate in a visiting service, but it requires commitment from the whole group of physicians to implement a visiting service across a large number of communities.

A regular assessment of how well primary care practitioners' demands for physician visits are being met is planned. In such a way, it is hoped to ensure a high quality service and demonstrate accountability to patients, referring practitioners and peers. The aim is to run a flexible service that satisfies all parties. If the physician service cannot meet reasonable requests, it will then be in a good position to seek funding to employ more physicians.

Role of physicians in a visiting service

The classic role of the general physician is especially relevant in the Northern Territory, primarily because the heavy disease burden affecting the Aboriginal and Torres Strait Islander population leads to a large number of people with multiple and complex illnesses. The 'second opinion' offered by physicians is a significant source of support for isolated primary care practitioners. Physicians should not be seen, however, as a substitute for inadequate primary care and they should only see patients referred from other medical practitioners. Importantly, physicians should aim to work within the broad guidelines and protocols operating within a local area and give an explanation for any departure from such protocols.

Physicians benefit from making such community visits. They receive a grounding in the difficulties of providing good clinical care in rural and remote settings, develop increased respect for the work of primary care practitioners in these settings, derive personal satisfaction from the opportunity to visit rural and

remote areas of the Northern Territory, and are reminded of the need for high quality communication from the hospital to the community.

Of course, it is hoped that a visiting physician service will contribute to better health outcomes for patients. However, the empirical evidence linking specialist services to improved health outcomes is too weak to justify 'improved health outcomes' being the primary goal. The initial goals should be more modest, aiming, firstly, for equity of access to specialist adult physician services for all urban, rural and remote people in the Top End and, secondly, for high levels of satisfaction with physician services as expressed by primary care practitioners.

Physicians should also aim to be part of a process that sets best practice standards in health care. Only through such a process will a realistic estimate of unmet need be derived. Indicators of need might include, for example, 'proportion of patients with moderate or severe rheumatic heart disease who have had a specialist physician review in the last two years' or 'proportion of diabetics who have had their eyes reviewed by an ophthalmologist in the last two years'.

Conclusions

The model of a centralised Darwin-based physician service with a regular visiting or outreach role in rural and remote communities is appropriate for the local region and justified by the workforce literature, in that there are simply no communities of a large enough size outside Darwin (that is, over 20 000 population) to support two specialists of the same discipline.

Given that there are fewer physicians in the Top End than might be expected from national averages (let alone local needs), and given that there is an unmet demand for physician services in the Top End (as expressed by primary care practitioners), the optimal number of physicians, at a guess, is higher than the 12 present in mid-1996, and could be closer to 20.

A visiting physician service is very cost-effective at face value. Taking one physician out to see a dozen patients is obviously more efficient than bringing those same 12 people into Darwin to see the same specialist. This efficiency is currently recognised by service providers as the costs of physician visits are generally met by the local health regions out of their Patient Assistance Travel Scheme budgets. However, with more visiting physicians, currently unmet needs may be identified and overall costs may rise if patients subsequently need more investigations and reviews.

Equally important as an adequate number of physicians is some mechanism to coordinate physician and other specialist services. There has been a proposal to

set up a Specialist Services Coordinating Unit, which has not yet been approved. The possible functions of such a unit would be to determine, in conjunction with primary care practitioners and others, the specialist service needs of the region, to create a register of people with special problems (for example, rheumatic heart disease and renal disease), to prioritise specialist and subspecialist care, to create a booking system to roster and coordinate specialist visits, to negotiate new specialty services from interstate, and to assess the feasibility of new technology (such as dictating machines with speech to text capabilities) in rural areas.

There is clearly no one model of service delivery appropriate for all regions and for all specialties. However, we need to recognise that the current provision of specialist medical services in rural and remote areas is more often ad hoc than planned and equitable. The outcomes of the Cottrell Conference on the 'Delivery of Specialist Services to Remote and Rural Aboriginal and Torres Strait Islander Communities', hosted by the Royal Australasian College of Physicians, and held in Darwin in November 1997, will include recommendations aimed at specialist colleges and the government on ways to improve service delivery.

Meanwhile, there are a number of lessons that can be drawn from the Northern Territory experience with physician services. Firstly, the type of model of specialist service delivery that is adopted must be clearly stated and the reasons for its adoption documented explicitly. Primary care practitioners need to know what they can expect from specialist services. Secondly, the model must cater for the whole region. Gaps in service need to be identified and coverage extended as appropriate. Thirdly, the service itself must be planned, monitored and evaluated and, in particular, it must be accountable to primary care practitioners. Fourthly, the delivery of individual specialist services should be coordinated with other specialist services, as well as primary care services. To deliver specialist services that are planned, equitable, evaluated and accountable requires an improvement in organisational methods as well as a change in philosophy.

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