

5. The international experience and lessons for Australia

In 1995, the international literature on benchmarking was sparse and generally unhelpful in developing Australian medical workforce benchmarks. This has changed considerably since then, with the literature expansive on methodologies and the successes and failures of medical workforce policy implementation.

The literature review in appendix 2 highlights a number of issues relevant to analysis of medical workforce demand and supply in Australia:

- Canada is the country most similar to Australia in its demographic structure and proportions of GPs and specialists in the medical workforce. Other similarities include:
 - a) GP over-supply in metropolitan areas;
 - b) shortages of physicians in rural areas, and use of nurses as partial substitute providers in remote communities;
 - c) concentration of specialists in metropolitan areas;
 - d) significant differences in medical workforce provision among provinces; and
 - e) reductions in medical school intakes.
- The United States has shortages of GPs and significant specialist workforce over-supply. Managed care organisations employ much lower numbers of doctors per 100,000 population than are employed in non-managed care arrangements. Increasing coverage of the population by managed care organisations is therefore reducing the projected workforce requirement.
- The United Kingdom has a low doctor-to-population ratio and is increasing medical school intakes to address shortages of GPs. The United Kingdom has found that the length of the economic working life of a doctor is declining.
- Some European countries have an over-supplied medical workforce to the point of significant unemployment. The most notable, and their unemployment rates for doctors, are Italy (24.5%), Austria (8.9%), Germany (5.2%), Spain (4.7%), and Netherlands (4.6%).
- European countries have placed upper limits on the working hours of junior hospital doctors, and this has created pressure to increase hospital staff numbers.
- There has been very little useful analysis yet in assessing physician supply against patient treatment outcomes. Hence it is not known whether increasing or decreasing GP and specialist supply in most circumstances will have a positive effect, negative effect or no effect on health outcomes.

The literature review suggests a number of areas where improvements could be considered for Australian medical workforce supply and demand analysis:

- an expansion in the list of indicators internationally recognised as flagging surplus supply and medical workforce shortages;
- principles for determining a region or model-of-care benchmark where supply appears to meet standards of adequacy, then use of that benchmark as a comparative tool to measure surplus or inadequate workforce in other areas;
- a Canadian model for benchmarking general practice which calculates standardised consultation workloads in a geographic area using premature mortality as a fourth indicator in addition to the three used in *Australian Medical Workforce Benchmarks* (1996) – age, sex and socioeconomic disadvantage;

- in individual medical specialties, using sustainable practice indicators of specialist numbers, population catchment area and infrastructure to identify under-served regional populations. In this respect the recently completed AMWAC report on sustainable specialist services will assist (AMWAC 1998.7);
- use of peak workload (in hours worked at age 50) for male and female doctors as the benchmark for calculating full-time-equivalents;
- estimation of the length of the economic working lives of male and female doctors to calculate annual wastage rates in workforce modelling; and
- the desirability of moving towards incorporating health outcomes measures in planning workforce requirements.

6. Indicators of workforce supply in excess of need

Indicators of workforce surpluses in particular regions or health services may include:

- Numbers of doctors per 100,000 population well above the national norm in a particular region or subset of the country, with no evidence of significantly better measures of health outcome.
- Over a long period, growth of the workforce well in excess of population growth, assuming adequate, or near-adequate, supply at the starting point.
- Pricing of medical services significantly below the average, or high adherence to a floor price.
- Declining average incomes.
- Supplier-induced demand and over-servicing.
- Under-employment.
- Market restructuring and the failure of recruitment to traditional models of practice.
- Growth in marketing effort.

Each of these is discussed in turn.

6.1 Provision well above the national average

Medical supply well above the national average in a State, or region within a State, is regarded in international benchmark methodology as evidence of a workforce surplus.

In Australia in December 1995 there were 253.8 practising clinicians per 100,000 population. States well above this average were South Australia with 303.5 per 100,000 population (19.6% above) and the ACT with 321.3 per 100,000 population (26.6% above). New South Wales with 268.7 per 100,000 population was 5.9% above the average. Queensland and Western Australia were well below with 88.8% and 86.6% of the national norm. South Australia had a 38.1% higher provision than its neighbour, Western Australia. However, the rural areas of South Australia have 122.4 clinicians per 100,000 population, below the national rural provision of 136.6 per 100,000 population, indicating both that the South Australian surplus is in Adelaide and that a large apparent surplus in a capital city does not flow into improved provision for under-served rural areas.

As discussed earlier, feedback from participants at the General Practice Research Workshop in Adelaide on 16 October 1997 suggested that large rural centres (population from 25,000 to 99,999) generally have an adequate supply of GPs, and it is in rural areas outside of these that workforce shortages are a significant problem. The 1994 statistical data in *Australian Medical Workforce Benchmarks* (1996) supported this proposition. These centres are: Albury-Wodonga, Dubbo, Lismore, Orange, Port Macquarie, Tamworth, Wagga Wagga (NSW); Ballarat, Bendigo, Shepparton-Mooroopna (Victoria); Bundaberg, Cairns, Mackay, Maroochydoore-Mooloolaba, Rockhampton, Toowoomba (Queensland); Whyalla (South Australia); and Launceston (Tasmania).

In 1995 these centres had an average of 106.5 GPs per 100,000 population. One centre well below this provision was Whyalla with 57.8. If Whyalla is excluded, the average becomes 107.6 per 100,000 population. It can be argued that if this provision is accepted as representing a lean but adequate GP supply for large rural centres, then the 128.6 GPs per 100,000 population in metropolitan areas represents a surplus of around 20%, even after adjusting for the higher proportion of female GPs in metropolitan areas (33.3% compared with 29.6% for large rural centres) which marginally compresses the full-time-equivalent

differential. This 20% represents 3,300 GPs, excluding from consideration a further few thousand doctors working as hospital non-specialists, mainly in metropolitan areas, whom the Health Insurance Commission classifies as non-vocationally registered GPs or Other Medical Practitioners (OMPs) on the basis of their private practice billing activity.

Such a calculation is what Schroeder (1996) would describe as a common sense calculation of workforce surplus supply. It gives a valuable 'ball-park' feel for the level of surplus capacity. However, it ignores demographic and socioeconomic population differences. A more refined result can be produced by aggregating upwards from smaller areas where adjustments to workforce requirements can be made by taking into account differences in patient need that would be expected from these population differences. This will be undertaken for the planned update of *Australian Medical Workforce Benchmarks*.

In the interim, the validity of the assumption that large rural centres in Australia have a lean but adequate GP supply is open for discussion.

Table 5: Employed medical practitioners per 100,000 population: occupation and States and Territories, 1995

Occupation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
<i>Clinician:</i>	268.7	246.5	225.5	219.7	303.5	256.7	321.3	254.2	253.8
Primary care practitioner	121.1	107.8	107.6	103.3	137.2	137.1	151.0	117.9	115.8
Hospital non-specialist	36.2	24.1	27.2	17.7	31.0	25.1	37.8	38.7	29.1
Specialist	86.7	85.6	70.4	79.9	104.9	76.2	112.0	75.3	84.3
Specialist-in-training	24.7	29.0	20.3	18.8	30.3	18.3	20.5	22.3	24.6
<i>Non-clinician:</i>	16.0	21.4	11.4	7.5	12.7	11.5	30.0	20.0	15.6
Administrator	3.7	6.0	3.0	2.4	3.8	2.1	10.3	7.9	4.2
Teacher/educator	1.2	1.1	0.9	0.6	0.8	0.8	0.6	0.0	1.0
Researcher	1.8	1.9	0.8	1.2	1.9	1.1	4.6	4.8	1.6
Public health physician	2.6	3.3	2.3	1.8	1.9	1.9	3.6	4.6	2.6
Occupational health physician	1.6	1.6	0.7	1.0	0.9	2.7	3.1	0.0	1.3
Other	5.2	7.5	3.7	0.6	3.5	2.8	7.9	2.8	4.9
Total	284.7	267.8	236.9	227.2	316.3	268.2	351.3	274.2	269.4
	(per cent—relative to total)								
<i>Clinician:</i>	105.9	97.1	88.8	86.6	119.6	101.2	126.6	100.2	100.0
Primary care practitioner	104.6	93.1	92.9	89.2	118.5	118.4	130.4	101.8	100.0
Hospital non-specialist	124.3	82.8	93.5	60.9	106.7	86.3	129.9	133.1	100.0
Specialist	102.9	101.5	83.5	94.7	124.5	90.3	132.9	89.3	100.0
Specialist-in-training	100.4	117.9	82.7	76.6	123.3	74.5	83.2	90.5	100.0
<i>Non-clinician:</i>	102.9	137.1	73.4	48.0	81.6	73.5	192.5	128.5	100.0
Administrator	90.1	144.5	72.3	58.0	92.0	49.4	247.9	189.1	100.0
Teacher/educator	119.6	111.1	92.2	56.5	78.4	83.4	62.1	0.0	100.0
Researcher	107.9	114.5	50.6	74.1	114.2	67.9	281.0	294.4	100.0
Public health physician	99.5	127.6	88.9	67.2	73.3	74.3	135.6	175.3	100.0
Occupational health physician	117.3	117.4	52.8	73.6	65.0	201.8	229.1	0.0	100.0
Other	106.9	154.0	75.5	11.5	71.4	58.2	162.4	57.0	100.0
Total	105.7	99.4	88.0	84.4	117.4	99.6	130.4	101.8	100.0

Note: Population data refer to estimated population at 31 December 1995.

Source: ABS: Cat. No. 3101.0, June quarter, 1996.

A consequence of accepting this methodology is that it may be considered inequitable to apply it only to the GP workforce.

In the preceding table, one could make a judgement that, for example, Victoria was a 'model' State in terms of its provision of specialists, specialists-in-training, and hospital non-specialists. Indeed, after the introduction of casemix funding in Victoria, one of the successes

claimed by the Victorian Government was a significant reduction in hospital waiting lists and waiting times, with what was said to be more effective use of the existing workforce, rather than an increase in the workforce to achieve this.

Table 6: State and Territory hospital non-specialist, specialist and specialist-in-training workforce provision based on Victorian workforce provision, 1995

Occupation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
(number)									
Hospital non-specialist	2,226	1,089	902	310	458	119	115	69	5,288
Specialist	5,336	3,870	2,334	1,395	1,548	360	342	133	15,318
Specialist-in-training	1,518	1,310	674	329	447	87	62	39	4,468
Total	9,081	6,269	3,910	2,034	2,454	566	519	241	25,074
(number per 100,000 population)									
Hospital non-specialist	36	24	27	18	31	25	38	39	29
Specialist	87	86	70	80	105	76	112	75	84
Specialist-in-training	25	29	20	19	30	18	20	22	25
Total	148	139	118	116	166	120	170	136	138
(number based on Victorian provision)									
Hospital non-specialist	1,482	1,089	799	421	356	114	73	43	4,378
Specialist	5,266	3,870	2,838	1,495	1,263	405	261	151	15,551
Specialist-in-training	1,783	1,310	961	506	428	137	88	51	5,266
Total	8,531	6,269	4,599	2,422	2,046	656	423	245	25,196
(adjustment)									
Hospital non-specialist	-744	0	-103	111	-103	-5	-42	-26	-910
Specialist	-71	0	505	100	-285	45	-81	18	233
Specialist-in-training	265	0	287	177	-20	50	26	12	798
Total	-549	0	688	388	-408	90	-96	4	121

The results in table 6 of this theoretical modelling, using Victoria as the benchmark, are:

- a total national workforce of 25,196, virtually the same total as before, but considerably re-distributed, with large flows from New South Wales, South Australia and the ACT to Queensland, Western Australia and Tasmania; and
- a large shift from non-specialist to specialist care.

The same modelling could be done using another State as the benchmark, or using different States as the benchmarks for the three workforce segments. However this approach is useful only in highlighting the relative under-provision in Queensland, Western Australia and Tasmania, and high provision in South Australia, when making decisions about prioritising the allocation of education and training resources, and then only where these macro characteristics of distribution apply to individual segments of the workforce under consideration.

However, beyond that, it is not sensible for several reasons, including:

- In contrast to the relative homogeneity and low levels of substitution characterised by the GP workforce, the specialist and hospital non-specialist workforce is very heterogeneous, substitution of service provision is widespread, and the public-private mix varies considerably among States and Territories. Hence it is feasible that different models of service provision may be just as effective in terms of cost and health outcomes.
- Outreach and extended service provision are ignored. For example, the specialist and hospital non-specialist workforce in the ACT services a population 25% larger than the

ACT resident population, while the Northern Territory receives a high proportion of its specialist services on an outreach basis from Adelaide.

- The urban-rural population mix and adequacy of existing services to the rural population are not considered.
- Relative differences in patient need among States are not considered. There are significant differences in age structure, Aboriginality, ethnicity, urbanisation, and health status measures.
- A number of specialist services are not viable for the Territories and Tasmania.

The alternative approach adopted by AMWAC has been to examine the workforce requirements of each specialty in turn, and collate these into a picture of the total specialist and specialist-in-training workforce. AMWAC is also planning an examination of the requirements of the hospital non-specialist workforce.

6.2 Over a long period, growth of the workforce well in excess of population growth, assuming adequate, or near-adequate, supply at the starting point

From 1984–85 to 1996–97, the number of Medicare primary care providers increased by 44.7% from 16,951 to 24,526 recognised general and other practitioners. The specialist workforce increased by 59.2% from 10,421 to 16,590. During the same period the population of Australia increased by 17.5%, from 15.7 million to 18.4 million.

Growth rates of the full-time-equivalent (FTE) GP workforce during the period from 1984–85 to 1996–97 by geographic area show that the workforce per 100,000 population increased fastest in capital cities, next fastest in other metropolitan areas and next fastest again in large rural centres (table 7). Although there were significant gains in GP numbers in the lowly provided rural and remote areas, overall there was worsening relative maldistribution of the workforce. In 1996–97, the FTE GP workforce in Australia increased by 239, with 92.1% of this increase (211 FTE GPs) going to capital cities, indicating an acceleration in the worsening of the relative distribution. The population per FTE GP in 1996–97 was 1,034 in capital cities, 1,105 in other metropolitan areas, 1,200 in large rural centres, 1,306 in small rural centres, 1,683 in other rural areas, 1,881 in remote centres and 2,781 in other remote areas. (However, it should be noted that there may be significant numbers of salaried doctors practising in rural and remote areas who are not counted in Medicare provider statistics. In 1996, there were 108 doctors employed by Aboriginal health services in non-metropolitan areas.)

The demographic characteristics of GP trainees have much to do with propensity to practise in metropolitan areas. In 1996, males represented 41.8% and females 58.2% of GP trainees. Of the male trainees, 71.4% were employed in metropolitan areas; of the female trainees, 77.7% were employed in metropolitan areas (AIHW, 1998). In 1995, Australian-born doctors comprised 66.0% of the trainees – 68.6% were training in metropolitan areas and 31.4% in rural areas, with a similar distribution for doctors born in the United Kingdom and Ireland (5.4% of trainees). Rural training was most attractive to the small number of New Zealand-born doctors – more than half were training in rural areas. Doctors born in Asian countries represented 15.9% of trainees, and 82.6% of these were training in metropolitan areas. Doctors from other countries comprised 10.9% of trainees and 77.8% were training in metropolitan areas (unpublished AIHW data).

Table 7: Full-time-equivalent GPs by geographic area, 1984–85, 1994–95, 1995–96 and 1996–97

Region	1984–85	1994–95	1995–96	1996–97	Increase 1984–85 to 1996–97		
					Number	%	% distn.
(FTE GPs)							
Capital city	7,039	10,903	11,172	11,383	4,344	61.7	74.8
Other metropolitan	808	1,227	1,252	1,267	459	56.8	7.9
Large rural centres	595	889	908	926	331	55.6	5.7
Small rural centres	652	924	929	925	273	41.9	4.7
Other rural	1,115	1,456	1,472	1,462	347	31.1	6.0
Remote centres	87	114	118	116	29	33.3	0.5
Other remote	98	122	120	121	23	23.5	0.4
Total	10,393	15,636	15,971	16,200	5,807	55.9	100.0
(FTE GPs per 100,000 population)							
Capital city	69.8	95.6	96.4	96.7	26.9	38.6	
Other metropolitan	72.5	90.7	91.0	90.5	18.0	24.9	
Large rural centres	65.5	81.7	82.6	83.3	17.9	27.3	
Small rural centres	66.4	77.2	77.2	76.6	10.2	15.3	
Other rural	51.9	59.3	59.9	59.4	7.5	14.4	
Remote centres	41.9	51.6	53.8	53.2	11.2	26.8	
Other remote	29.0	36.3	35.7	36.0	6.9	23.9	
Total	65.8	86.6	87.4	87.5	21.7	33.0	
(population per FTE GP)							
Capital city	1,433	1,046	1,037	1,034	-399	-27.8	
Other metropolitan	1,380	1,102	1,099	1,105	-275	-19.9	
Large rural centres	1,528	1,224	1,211	1,200	-328	-21.4	
Small rural centres	1,506	1,296	1,295	1,306	-200	-13.3	
Other rural	1,926	1,687	1,670	1,683	-242	-12.6	
Remote centres	2,385	1,936	1,860	1,881	-504	-21.1	
Other remote	3,445	2,754	2,802	2,781	-664	-19.3	
Total	1,519	1,154	1,145	1,143	-377	-24.8	

Sources: DHFS 1997a and b; unpublished 1996–97 data.

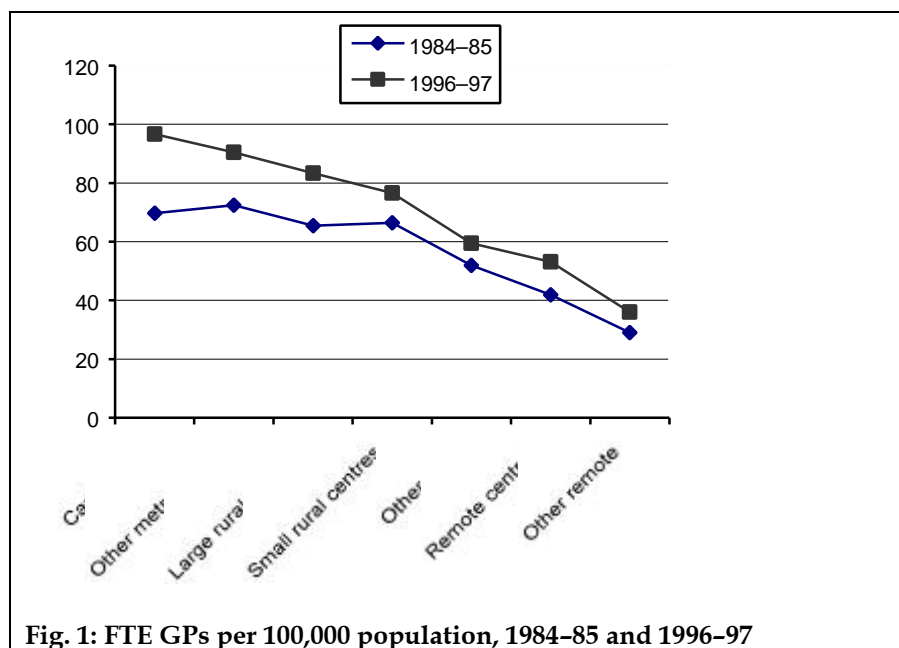


Fig. 1: FTE GPs per 100,000 population, 1984–85 and 1996–97

If growth of the workforce is well above population growth, this may be remedying a shortage at the starting point. In the mid-1980s there was an assessment of adequacy of medical workforce supply undertaken by The Commission of Inquiry into Medical Education and Medical Workforce (1988). This found the following:

- Australia appeared well-endowed overall with medical practitioners compared with other countries.
- There was no evidence of over-supply in the medical specialities, and general agreement that there was under-supply in some smaller specialties and sub-specialties.
- There was some evidence of an over-supply of GPs in some areas of capital cities. A number of submissions said that there was an over-supply of GPs in Australia, that excess GPs tended to set up practice in over-doctored metropolitan areas, and that the workload of many metropolitan GPs was too low to be financially viable.
- There were shortages of resident medical officers in hospitals.

Hence it can be concluded that the GP workforce in capital cities has moved from a position of over-supply in 1985 to far greater over-supply in 1997, given the increase in the capital city FTE GP workforce from 7,039 in 1984–85 to 11,383 in 1996–97, together with the analysis of population requirements in *Australian Medical Workforce Benchmarks* (1996).

6.3 Pricing of medical services significantly below the average, or high adherence to a floor price

Increasing medical workforce supply per 100,000 population increases competition in the market place to the point where prices of medical services will reduce. Further competition from additional supply will reduce price to the floor price, the Medicare rebate. In 1984–85, 52.5% of GP services were bulk-billed. By 1996–97, this had risen to 79.4% for vocationally registered GPs and 88.8% for other primary care medical practitioners, despite the fact that this floor price, the Medicare rebate, was not increased by government to keep pace with inflation and therefore fell in real value. The increases for selected specialist peer groups can be seen in table 8. The extent to which the Medicare rebate represents a price which provides sufficient remuneration to cover practice costs will vary from specialty to specialty and is unknown; this factor will influence the direct-billing rate.

Table 8: Medicare: percentage of services direct-billed, 1984–85 and 1996–97

Selected peer group	1984–85	1996–97
GP–other	52.5	88.8
GP–vocationally registered	. .	79.4
Obstetrician and gynaecologist	10.3	18.9
Specialist surgeon	17.6	26.8
Specialist anaesthetist	3.3	5.6
Psychiatrist	39.2	48.7
Specialist imagist	35.1	65.5
Specialist radiation oncologist	5.1	7.5
Specialist pathologist	45.2	78.6
Specialist dermatologist	30.5	40.9
Physician	20.9	35.1
Other medical	37.5	61.1

Source: Medicare statistics, DHFS.

In some circumstances, monetary price to the consumer is zero for all services. This includes certain salaried services (such as university medical centres and Aboriginal health services), public hospital accident and emergency departments and inpatient services, and private services where there is universal bulk-billing in a geographic area. In these, the main curbs on demand are costs incurred by the patient such as travel time and length of the waiting time to see a practitioner, or, in the case of public hospital inpatients, the waiting time to get a bed to receive the service. However, the more medical practices there are with increasing supply, and the greater the opening hours of the practices, the greater the increase in access for patients and the lower the average personal time and travel cost. In other words, increasing supply lowers the non-monetary as well as the monetary cost of medical services. This is particularly important for rural and remote people, where the non-monetary costs may be quite high, especially when travel costs also include overnight accommodation charges.

If supply increases to the point where there is no waiting time and no monetary cost, then demand can increase accordingly as people take advantage of the lack of a consultation fee and no waiting time. These people include persons who:

- would not normally attend a doctor for a mild complaint or preventive health care, or
- are unsure whether they should attend.

Demand will increase until consumer satiation levels are reached, unless the increase in demand once again creates a significant waiting time. Consumer satiation levels may be increased in various ways by suppliers (discussed more fully later), if the number of suppliers increases past the point where they are fully occupied.

On weekends, supply reduces significantly, and some bulk-billing practices on weekdays have been able to successfully introduce a patient co-payment for weekend consultations (various reports in *Australian Doctor*).

A large drop in supply also occurs late at night. Arnold (1997) has said that there is a shortage of doctors willing to enter old-style 24-hour personal practice. For more than 20 years it has been difficult to recruit doctors willing to do night and weekend work on top of GP practice during the day. Economic proof of this is the 'incredible salaries paid for country locums, and the many city GPs who close their practices during holidays because they cannot afford a locum'.

On the other hand, Arnold said that 'there's no shortage of part-time or casual doctors in "entrepreneurial" practices. The economic proof: the low salaries (or percentages) paid to part-timers and the high percentages retained by the proprietors.'

In summary, in a market becoming over-supplied, three prices are lowered:

- the monetary price of the service to patients;
- the time, travel and other non-monetary prices to patients; and
- the price of salaried medical labour.

Nevertheless, in such a market, there is a much lower supply of doctors willing to work either unattractive hours or in unattractive locations (such as outer metropolitan, low socioeconomic areas), and the three prices above, in real terms, should all be higher for unattractive hours and unattractive locations. When the available Medicare and other monetary and non-monetary remuneration is insufficient to recruit enough doctors for these unattractive hours and locations, there will be the perception of a shortage of doctors in an otherwise over-supplied medical labour market. However, adding to an over-supplied GP

capital city workforce will not solve a problem which is driven by price and the working hour and location preferences of doctors.

6.4 Declining average incomes

Declining real income may be an indicator of over-supply (Schroeder, 1996). However, it can be caused by other factors such as technology reducing prices of some diagnostic and procedural services, or government funding bodies constraining growth in remuneration. It is not a workforce planning concern in itself unless it leads to undesirable outcomes such as unwarranted induced demand which leads to either excessive expenditure by government or poor health outcomes.

During the last decade a powerful downward pressure on GP income has been exerted by the 20.7% decline in the average population per Medicare primary care provider between 1984-85 and 1996-97, and the rapid rise in bulk-billing from 52.5% to 80.4%. In 1989-90 prices, there was an average annual decline of 0.09% per year in the gross fee income from Medicare-funded services for full-time GPs in Australia (DHFS 1997a). Then AMA Vice-President David Brand commented on these data by saying that practice costs have increased and net incomes fallen (*Australian Medicine*, 16 September 1996).

The downward pressure on incomes from reducing average patient loads and market pressure to bulk-bill has been offset to an extent by an 8.1% increase in average services per practitioner, from 4,020 to 4,345. This increase has been largely attributed to transfer of health services from institutional to community care, ageing of the population, increasing community demand, and supplier-induced demand, discussed below. The rise in average services rendered also indicates faster patient consultations on average, as mean hours worked have declined with a rising proportion of female GPs in the workforce, from 25.1% in 1986 to 33.3% in 1996. There is no evidence however that female GPs are reducing their consultation times; they have a higher proportion of longer consultations than males, at least partly associated with a higher percentage of female patients. However, it is likely that both male and female GPs in metropolitan areas are referring a higher proportion of patients to specialists, for medico-legal reasons if nothing else.

The Royal Australian College of General Practitioners (RACGP), in a submission to the AMWAC benchmark working party in 1997, said that general practice has changed because of inadequate remuneration. It said that GPs are in fact frequently seeing patients more quickly than they would prefer for good practice, and it is becoming more common for patients with multiple problems to be asked to come back for a second consultation in respect of the lower priority health conditions.

6.5 Supplier-induced demand

Dr Richard Scotton (1998) says that 'the ability of doctors to influence demand for their services, through their socially accepted role as experts for their patients, is widely accepted by health economists and doctors. Whether "supplier induced demand"(SID) is motivated by financial maximisation or the desire to provide superior service to patients is irrelevant to the argument about its scale or existence. However none of the proponents of SID suggests that doctors are untrammelled in their discretion to determine service use'. Scotton says that 'constraints imposed by ethics, practice protocols and market forces leave room for considerable discretion on the part of individual doctors, the exercise of which is influenced by, among other things, the amount of time they have available and their views on appropriate levels of income. The evidence includes:

- remarkable variations in per capita service use in areas with different population ratios and different methods of payment; and
- rates of growth in service use over time which correlate more closely with increases in doctor numbers than with population growth.'

Scotton concludes that 'the generally accepted implication of these propositions is that, far from having a capacity for self-correction by market forces, the medical practice industry in Australia has a chronic tendency to develop excess capacity and for increments to its workforce to generate additional utilisation of its own services and other inputs to care'. However, there are limits to this. Protection against possible legal action may encourage a level of over-servicing, but at the same time sets limits on the extent of over-servicing which may occur. Likewise fear of investigation by the Health Insurance Commission constrains servicing within outlying statistical and professional bounds of practice norms.

Professor Jeff Richardson (1998) has reviewed the evidence for and against supplier-induced demand in Australia and found that there is strong empirical evidence. He found a high correlation:

- between GP services per capita and the number of full-time-equivalent (FTE) GPs per 100,000 population from 1983 to 1997; and
- between specialist services per capita and the number of FTE specialists per 100,000 population over the same period (excluding the specialties of pathology and radiology).

He modelled supply and demand for medical services with supplier-induced demand using data on FTE GPs in statistical subdivisions for 1996-97, and concluded that the results were 'striking' in support of supplier-induced demand.

Richardson provides an explanation of supplier-induced demand using the plausible assumption that doctors firmly believe in the efficacy of their own treatments and that more of them are better. Hence, from this perspective, 'SID is nothing more than the use of capacity to its limit; something doctors have been trained to do, expect to do and believe is ethically appropriate'.

Phelps (1992) in his textbook *Health Economics* provides two empirical examples of supplier-induced demand from the one study. Hickson, Altmeier and Perrin (*Paediatrics* journal, 1987) conducted a 'randomised controlled trial using residents in a continuity care clinic at a university hospital which randomly selected half of the doctors to receive a fee-for-service payment and the other half to be paid by flat salary. Patients attending the clinic were also randomly allocated to the doctors. Once assigned to a given patient, the patients continued with that doctor for all their care, unless the doctor missed an appointment, in which case another doctor would see the patient.' The patient fees were set at a rate so that the incomes of both sets of doctors should end up about the same. The results were that the fee-for-service doctors scheduled more visits for their patients (4.9 visits per year versus 3.8) and saw their patients more often (3.6 visits versus 2.9). Almost all of the difference in behaviour was due to well-care visits (1.9 visits vs. 1.3 visits).'

'In addition the fee-for-service doctors scheduled excess well-care visits (beyond those recommended) for 22% of their patients, while the salary doctors did this for only 4% of their patients.' The standard for well-care visits (routine examination, vaccination etc.) was a schedule of recommended treatment for children set by the American Academy of Paediatrics.

If this finding was true of GP services in Australia, relatively high growth in well-care visits may be expected if supplier-induced demand was being used as a mechanism to maintain medical incomes in the face of falling average patient numbers and falling prices for

services. A comparison between 1989–90 and 1995 Australian Health Survey data suggests that this may be the case. Between the two survey periods the population increased by only 6.7%. However, the number of people consulting a doctor in a two-week period for a checkup or examination increased three-fold from 264,000 to 826,000 people, and the number consulting for a test, including X-rays, doubled, from 115,000 to 229,000 (table 15, appendix 1). This contrasted starkly with the increase in persons consulting a doctor for most medical conditions, where the changes in numbers were much more in line with expectations based on population growth and disease trends. However, there were changes between the surveys in both the way the question was asked, and in how it was recorded, which may have inflated reporting of a checkup/examination and a test.

Question in 1989–90. I want to talk to you about (this/your most recent) consultation.
 What medical conditions did you have which caused you to consult the (doctor)?
Interviewer: Prompt for condition if a treatment or symptom is reported.

1.
 2.
 3.

Question in 1995. I would like to ask you about your most recent consultation.
 What were the medical reasons for this consultation?
Interviewer: Prompt for condition if a treatment or symptom is reported.

1.
 2.
 3.

Examination/Checkup
 Test

These questionnaire changes from 1989–90 to 1995 make interpretation of the increases in examinations, checkups and tests inconclusive.

One might also expect to find higher levels of use of checkups and examinations among metropolitan doctors but this is not the case. In metropolitan areas, 18.6% of GP consultations were reported as checkups or examinations, in rural centres 22.7% and in other rural and remote areas 20.5% (table 23, appendix 1). During a two-week period, AIHW estimates for 1995 from the ABS data indicate that:

- in the metropolitan population, 4.1% of the population received a GP checkup or examination, and 0.9% a checkup or examination from a specialist;
- in rural centres, these percentages were 4.2% and 0.5%; and
- in other rural and remote areas, the rates were 3.9% and 0.8%.

Scott and Shiell (1997) used data from the Australian Morbidity and Treatment Survey 1990–91 to test the hypothesis that ‘GPs in areas of high competition are more likely to recommend a follow-up consultation compared to GPs in areas of low competition’. They theorised that ‘for medical conditions where there is little consensus about treatment because of uncertainty, there may be more scope for income-generating behaviour compared with the treatment of medical conditions characterised by less uncertainty. This is because where comparatively little is known about the “appropriate” treatment of a condition there are more options available to the GP, including adopting a “wait and see” approach that may involve a follow-up consultation. Thus, the choice facing the GP may involve arranging

another consultation or asking the patient to return if the problem gets worse. In areas of high competition where workload is low, it is more likely that a follow-up consultation will be arranged given that it also generates extra income. In areas of low competition and excess demand where workload is high, GPs may be more likely to tell the patient to return only if the problem gets worse.'

They concluded that 'the results lend some support to the hypothesis that GPs located in areas of high competition were more likely to recommend follow-up consultations relative to GPs in areas of low competition, but only for certain medical conditions'. They found various influences on the decision to follow-up including the age of the patient, the age of the GP, the medical condition and the size of the practice, and they only examined four medical conditions, too few for conclusive results.

Evidence that supplier-induced demand in Australia produces over-servicing includes:

- The Health Insurance Commission's Professional Services Review division is responsible for monitoring and preventing significant over-servicing by Medicare providers, and each year identifies providers with practice patterns well above the norms of their peers. There were 456 medical practitioners and 8 optometrists counselled in 1995-96 because of concerns about their practice, and 19 medical practitioners were referred to the Director, Professional Services Review.
- In 1997, Helen Chryssides, a qualified female dentist, reported widespread supplier-induced over-servicing in dental practice. She had her teeth examined by a four-person panel consisting of her personal dentist, an associate professor at the University of Melbourne's dental school, a senior lecturer at the Sydney University dental school, and the Director of the Dental Health Foundation. All four agreed that she had good oral health and the only dental treatment justified would be a clean and scale at a charge of \$60. She then randomly selected 37 dental practices from all States and Territories and presented at each for a check-up and advice on any work that was needed. She said, 'Most of the practices visited tried to sell me better-looking teeth'. Of the 37, only a few did not attempt to over-service, with quotes for work ranging up to almost \$3,000. Gross over-charging was apparent in a number of instances. Two practices suggested she fraudulently claim from her insurer for work not done. By the end of her journey, she says that 16 out of her 28 teeth had been singled out for treatment. Chryssides feels that the high level of over-servicing is due to an over-supplied workforce for a population requiring much less procedural dental work. She says Australia's dental health has improved dramatically in the last 30 years due to the addition of fluoride to water supplies and better dental health education. For example, the number of 12 year olds with cavities has dropped 84% since the 1960s. However, the number of practising dentists increased from 4,550 in 1976 to 7,600 in 1996.
- In January 1998, recruitment agency Morgan and Banks published a survey of 400 wage and salary earners in which 12.4% admitted taking non-genuine sick leave, and estimated that such sick leave was costing the community \$2.56 billion. Two newspapers, the *Sunday Telegraph* and *Sun-Herald*, decided to test the validity of this by sending reporters out to medical practices across Sydney, telling the doctors that they were not sick but wanted to take a day off work. The newspapers reported on 25 January 1998 that 70% of the general practitioners in each sample of ten practices issued sick leave certificates, despite this being both fraudulent and illegal.

One presentation at the 1997 Trilateral Physician Workforce Conference in Canada put the argument that a workforce over-servicing a population may do more harm than good. 'Then, a constrained supply of the specialists is not rationing but *improving* health care.' In the dental situation in Australia, Chryssides argues that this is the case because dentists

unnecessarily replacing old fillings remove healthy tissue and the tooth is further weakened. If amalgam fillings, which last 20 years, are replaced with white fillings, the latter chip and stain and need replacement after 5 to 10 years. The long-term outcome for the patient is poorer oral health status.

In the surgical disciplines, there is an element of risk of adverse outcome with all surgery, including the risk of exposure to infection just in being hospitalised. Hence any surgery unjustified on clinical grounds, whether supplier-induced or patient-induced, will produce a population outcome where a small number of patients will have had an adverse outcome that was avoidable. Thus there are both cost and health outcome benefits in constraining supply so that there is sufficient queuing and waiting for elective surgery to reduce both patient and/or professional demand for unnecessary, non-urgent procedures to be undertaken. Another important reason for constraining surgical supply is that an over-supply of surgeons could lead to inferior care because of lack of practice with complex procedures. However, supply has to be balanced with community expectations of access and reasonable waiting times.

6.6 Growth in marketing effort

Growth in marketing effort is a response to a market becoming increasingly competitive. Marketing of medical services may help achieve better health outcomes through measures such as increasing immunisation and health screening rates, and increasing patient knowledge of health issues. However, in the last ten years medical marketing has developed much more of a commercial edge. Examples include telephone book advertising for special services offered by specified medical practices, weekly metropolitan newspaper advertisements for diagnosis and treatment of particular conditions by registered doctors, and street advertising of bulk-billing availability, while the décor and furnishing of waiting rooms in many medical centres has become much more consumer-oriented.

Australian Doctor (23 January 1998) even offers a guide for general practitioners to increase both consultations from existing patients and market share from other GPs and alternative health care providers.

In the same issue of *Australian Doctor*, a GP predicts that at least some GPs in over-supplied areas ('congested inner-city areas') who cannot, with marketing and improved services, lift their price above the Medicare rebate, 'can expect to go out of business in the coming decade'.

6.7 Under-employment

There were 1,693 male and 3,406 female GPs working fewer than 35 hours per week in 1996, representing 12.2% and 51.3% of the male and female GP workforces respectively. Kilham (1995) and others have speculated that in an over-supplied market a proportion of these GPs were working shorter hours not through choice but through necessity, ie. there was not enough work available. There is no significant evidence of this because no one has tested this hypothesis explicitly in a survey. In 1997 AMWAC contracted Human Capital Alliance Pty Ltd (HCA) to conduct a stratified sample survey by personal telephone interview of male and female doctors to determine initial career preferences, career paths followed and levels of satisfaction with those career paths. This sample of 296 successful interviews encountered a few metropolitan GPs who volunteered during the course of the interview that they were under-employed. The numbers were not significant and further research is needed (AMWAC 1998.4).

6.8 Market restructuring and the failure of recruitment activity to traditional models of practice

The Australian Bureau of Statistics 1994–95 Private Medical Practice Industry survey found that general practices with one or two practitioners had an average operating profit margin of 23.9%, those with 3 to 5 practitioners a margin of 28.3%, and those with 6 or more a margin of 34.1%. Of the 20,825 general practice medical practitioners, 17% (3,491) worked in medical practices that generated up to \$100,000 in total income while 15% of practitioners worked in practices which earned more than \$1 million. The smallest practices had the lowest fee for medical service income per medical practitioner employed (\$34,100). The million dollar practices reported the highest fee for medical service income per medical practitioner employed (\$171,300), and the highest operating profit margin (36.8%).

In the face of market statistics on profitability and the long hours that have to be worked in a small practice to earn sufficient income, it is not surprising to find that when a doctor leaves a small traditional family practice, there is considerable difficulty in recruiting a replacement, as Arnold (1997) explained in *Australian Medicine*. However, there seems to be a widespread view in the medical profession that such difficulty in recruitment demonstrates a shortage of doctors, rather than an end result of market pressures to improve efficiency.

The 7-day per week, extended hour, large group practice, with its entrepreneurial internal and external architecture and marketing can be seen as a market response to the following:

- declining profitability for small practices, as large practices have significantly lower overheads per practitioner, and can also more effectively attract multi-disciplinary health care teams in the one setting, further lowering overheads per practitioner and attracting more 'customers'.
- consumer demand for a more accessible, more consumer-friendly alternative to the waits in the past of up to several hours for after-hours medical care in public hospital accident and emergency departments, which in the 1990s have increasingly encouraged consumers to use such community general medical care.
- labour force moves away from standard hours of work, and to two income families, which increasing demand for convenient hours of medical care.
- consumer demand from family members who do not want to see the family GP for privacy or convenience reasons, eg. teenagers seeking contraceptive advice, or for parents who are both working in a city area and use the convenience of a medical centre near work.
- need by travellers or persons away from their home location for convenient emergency medical care.
- a rising proportion of medical graduates, both female and male, who prefer to work part-time. The salaried practice arrangements of large group practices facilitate this. Arnold (1997) reports that such practices do not have difficulty in recruiting medical staff.
- a shortage of GPs in small practices willing to undertake after hours and locum work, both because of lifestyle and because of safety factors, as increasing levels of drug addiction in the community led to more frequent incidents of robbery and/or assault on pharmacists and doctors at night.

Whether or not this restructuring is good or bad for medical practice is for others to decide. The reality is that restructuring is underway and will continue.

7. Indicators of workforce shortages

Indicators of workforce shortages are in most cases the opposite to those flagging supply in excess of need, and include:

- Numbers of doctors per 100,000 population in a geographic area or health service well below national norms.
- Pricing of medical services significantly above the average.
- Under-servicing and unmet need compared with population norms.
- Higher waiting times.
- Overworked practitioners.
- Dissatisfaction with the stresses of overwork and being unable to fully meet population need.
- Substitution of services by GPs for specialists, and by nurses for GPs.
- Employment of temporary-resident doctors (TRDs) in area-of-need positions.
- Unfilled public hospital positions.

7.1 Numbers of doctors per 100,000 population well below national average

In section 6.1 it was noted that:

- Queensland and Western Australia had just 88.8% and 86.6% of the national provision of 253.8 practising clinicians per 100,000 population; and
- feedback from some Division of General Practice representatives suggests that large rural centres, excluding Whyalla, appear to be adequately supplied with GPs, at a rate of 107.6 per 100,000 population in 1995.

The same feedback suggested that rural and remote areas outside these large rural centres have real workforce shortages. These areas had 82.6 GPs per 100,000 population in 1995. If this provision of 82.6 per 100,000 population was lifted to a large rural town provision of 107.6 per 100,000 population, then the number of practitioners would increase by 1,020 from 3,480 to 4,500. This figure is in line with 1998 estimates of the rural GP shortage by the Rural Doctors Association of Australia and the Royal Australian College of General Practitioners.

However, this rough benchmark calculation does not take into account the following positive and negative influences on requirements:

- significantly higher standardised morbidity and mortality rates in these areas and therefore a greater population need for medical services (section 4.4);
- greater need arising from population dispersion factors (section 4.6);
- Flying doctor and other outreach services which reduce, to some extent, the need for doctors on the ground;
- Medicare data on utilisation patterns which indicates that males in the 'bush' are less likely to visit a GP than males in metropolitan areas and in large country towns. Age-standardised mortality and hospital morbidity data show that these males in fact have greater ill-health and injury than other males. Lower GP visits may therefore represent unmet need from poorer access, or could be a personality trait of 'toughness' that means

males in the 'bush' are far less likely than their metropolitan counterparts to seek primary medical care for minor ailments, even if the care is accessible; and

- many small rural centres of 10,000 to 25,000 people, quite a few of which are designated cities, may have an adequate medical workforce.

In respect of specialists, numbers of resident specialists in rural areas per 100,000 population are considerably below those of metropolitan areas. However, this lower provision has to be carefully interpreted on the basis of the following factors:

- type of specialist;
- population and infrastructure requirements for long-term viable practice;
- outreach services provided;
- patient morbidity and patient utilisation levels compared with metropolitan areas;
- transport linkages to centres providing specialist services; and
- level of substitution by GPs and generalist specialists such as general surgeons.

Further information on the population and other factors influencing sustainability for specialist services is contained in the recent AMWAC report, *Sustainable Specialist Services: A Compendium of Requirements* (AMWAC 1998.7).

In respect of hospital non-specialists, numbers per 100,000 population are not meaningful because of the large scope for substitution of services by GPs and specialists.

7.2 Pricing of medical services significantly above the average

Above-the-norm pricing of medical services in areas of shortage was demonstrated in *Australian Medical Workforce Benchmarks* (1996) where the average co-payment for GPs in major rural areas was 12.2%, in minor rural areas 11.3%, and in remote areas 19.5%, compared with 7.5% in capital cities and 7.3% in other metropolitan areas.

Dr Andrew Jackson (*Australian Doctor*, 23 January 1998) says that in well-supplied inner city areas, an increase in price will deter patients from presenting and the practice will lose patients, as happened to an inner Sydney practice which was forced to reintroduce bulk-billing or go broke (*Australian Doctor*, 5 December 1997). In areas of shortage, Jackson says that practices can generally increase fees and raise revenue, without losing significant numbers of patients, particularly if patient services are improved.

Paterson (1994) noted that it seemed to be too much of a coincidence that the medical specialities that appeared to have the greatest shortages also had the highest co-payments. However, inter-relationships between level of supply, provision of services, price of services, cost of production of the service, private health insurance coverage and other factors are complex for the medical specialties and therefore simple relationships are difficult to establish with confidence.

7.3 Under-servicing and unmet need compared with population norms

AIHW analyses of Medicare data for AMWAC studies of specialties have consistently found a lower coverage of the rural population receiving specialist services, while numbers of GP consultations per person are much lower (table 18, appendix 1). This is only partly due to the exclusion from Medicare statistics of Aboriginal people receiving care from Aboriginal health services. There is also an unknown effect from possible differences in private health insurance coverage between rural and urban areas. However the 1997 AIHW report *Rural*,

Remote and Metropolitan Health Differentials: A Summary of Preliminary Findings shows that this is countered by higher rates of hospitalisation for rural people.

The 1995 Australian Health Survey found that, during a two-week period, 22.0% of metropolitan residents consulted a GP and 4.5% a specialist, 18.6% of residents of rural centres consulted a GP and 3.0% a specialist, and 18.9% of residents of other rural and remote areas consulted a GP and 3.1% a specialist (table 24, appendix 1).

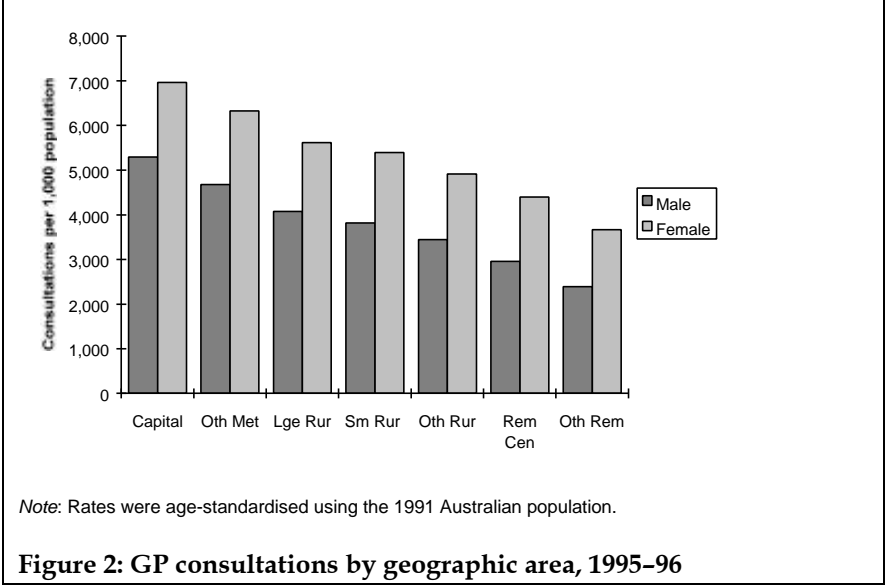


Figure 2: GP consultations by geographic area, 1995-96

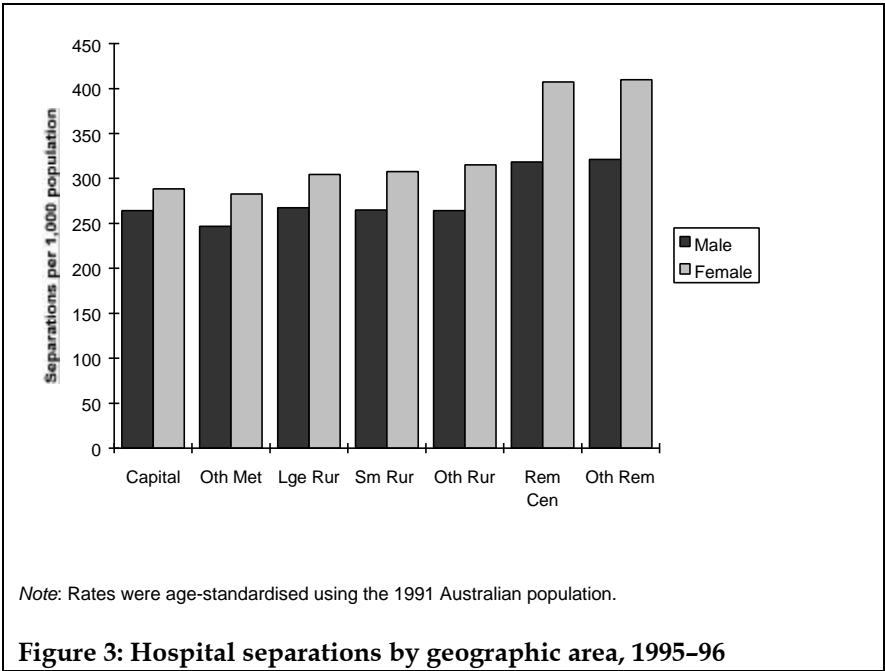


Figure 3: Hospital separations by geographic area, 1995-96

Because AMWAC has yet to find evidence of over-supply of specialists in metropolitan areas, the lower percentages for rural populations consulting specialists suggest unmet need, although these may also mean that specialist services are in fact being adequately delivered to rural residents, but less frequently, or through GPs as substitute providers.

The GP figures in table 24 showing 18.6% of the population in rural centres, and 18.9% of other rural and remote populations, consulting a GP in a fortnight do not suggest under-servicing, although below the 22.0% of the population in metropolitan centres consulting a GP during the same period. However, Medicare data show that the more remote the locality, the less likely the GP service is rendered by a resident GP. In 1995–96, 98.1% of the GP consultations of capital city residents were provided by capital city GPs. For residents of ‘other remote’ areas, only 64.5% of their GP services were provided by a GP from an ‘other remote’ area, with 11.0% provided by a capital city GP, either on an outreach basis or through the patient travelling to attend the GP (table 25, appendix 1). Not having sufficient resident GPs to fully meet local needs may be considered by such populations to be an unmet need.

For GPs whose practices were in an ‘other remote’ area, 83.8% of consultations rendered were to ‘other remote’ area residents, with 4.9% to capital city residents, who may be casual or temporary visitors to the remote area, or patients of GPs who moved to and from capital cities during a year.

7.4 Overworked practitioners

Average weekly hours worked, and on-call not worked, are much higher for rural practitioners than for metropolitan. The percentage of doctors working 60 hours a week or more rises with distance from a capital city.

In *Medical Labour Force 1996* (AIHW, 1998) the hours worked by different types of clinicians are examined in some detail. The report found that:

- 10.1% of clinicians reported working 65–79 hours per week and a further 4.5% reported working 80 or more hours.
- 56.1% of interns and resident medical officers worked 50–64 hours while 15.3% worked 65 or more hours per week. The AIHW medical labour force survey does not collect data on the length of shifts worked.
- 49.1% of specialists-in-training worked 50–64 hours per week, while 20.6% worked 65 or more hours.
- 41.2% of specialists worked 50–64 hours per week, while 17.0% worked more than 65 hours per week. In the surgical specialties, 28.7% of doctors worked 65 hours per week or more, compared with 19.7% in internal medicine, 4.9% in pathology specialists and 12.8% in other specialties. The main specialties in which practitioners worked 65 hours a week or more were cardiothoracic surgery (44.8%), vascular surgery (34.0%), orthopaedic surgery (30.7%) and paediatric surgery (30.1%).
- 32.4% of primary care practitioners worked 50–64 hours per week, while 11.5% worked 65 or more hours.
- 32.4% of salaried hospital career practitioners worked 50–64 hours per week, while 11.2% worked 65 or more hours.
- The highest proportions of doctors reporting working 80 or more hours per week were surgeons (9.6%), specialists-in-training (6.6%), internal medicine specialists (5.6%), and interns and resident medical officers (5.1%).

In Europe legislation has been introduced in some countries for patient and doctor safety reasons to reduce the maximum hours that could be worked; since 1996, the Australian Medical Association has been developing a safe working hours policy in a campaign to reduce excessive hours worked by junior doctors.

7.5 Higher waiting times

A consultancy study on rural general practice by Intstat Pty Ltd (1997–98) has found anecdotal evidence from Divisions of General Practice of waiting times of up to a week or more for non-urgent consultations in areas where there are GP shortages.

The National Waiting Times Data Collection on public hospital waiting times in Australia in 1995–96 found waiting and clearance times above the norm in specialties assessed by AMWAC as experiencing shortages: ophthalmology, urology, orthopaedic surgery, and ear, nose and throat surgery (*Australia's Health 1998*, pp. 205–09).

7.6 Dissatisfaction with the stresses of over-work and being unable to fully meet population need

The 1997 AMWAC career paths survey of medical practitioners has found dissatisfaction among solo rural practitioners about being overworked (AMWAC 1998.4). The National Centre for Epidemiology and Population Health survey of GPs in 1995 reported that 24.8% of GPs experienced dissatisfaction arising from workforce shortages.

7.7 Substitution of services by GPs for specialists, and by nurses for GPs

In rural areas outside of the large country towns, rural GPs substitute to a significant extent for specialists by undertaking higher levels of procedural work than their metropolitan counterparts, who would refer much of the procedural cases to specialists instead of doing it themselves. In remote areas specified by State health authorities as experiencing significant GP shortages, nurses have special powers for a limited range of prescribing and other activities normally undertaken by a GP.

7.8 Distance to medical services

In its 1994 national survey of Aboriginal and Torres Strait Islander health, ABS used access to services within a distance of 25 km to measure apparent deficiencies in access. It found that in all States and Territories and across all regions, doctors were available either on a permanent or visiting basis in the majority of cases. In each State fewer than 10% of Aboriginal and Torres Strait Islander people did not have a doctor, either permanent or visiting, within 25 km. In rural areas, service provision was least satisfactory, with over 15% of people in private dwellings not having a doctor available to them within 25 km, and only one in three people having a permanent doctor within that distance.

In rural areas, 78.1% of Aboriginal and Torres Strait Islander people did not have access to a mental health service within 25 km, either permanent or visiting, 44.7% to an antenatal service, 40.7% to a diabetic service, 35.1% to a women's health service, 17.1% to a baby health service, 55.5% to a health promotion service, and 47.5% to a sexually-transmitted diseases clinic. However, in the Northern Territory, Aboriginal health workers were available within 25 km to 93% of people.

7.9 Under-representation of Aboriginal doctors in the workforce

The overseas literature suggests that the medical workforce should have an adequate representation from ethnic and racial minorities where the practice of medicine is enhanced by cultural understanding and cultural communication skills.

Aboriginal and Torres Strait Islander people represent 2% of the Australian population and are the most disadvantaged population group in Australia as measured by their health and socioeconomic status indicators. However, there are relatively quite few Aboriginal medical practitioners, and, while the numbers of Aboriginal medical students have been increasing, they represent less than 1% of medical student intakes. At the 1996 census, there were 29 Aboriginal and Torres Strait Islander GPs, 20 specialists, 12 doctors-in-training and 21 medical administrators enumerated. The GPs and specialists represented 0.1% of the medical workforce.

7.10 Employment of TRDs in area-of-need positions

Area-of-need positions, filled by temporary-resident doctors because they were unable to be filled by Australian medical graduates, represent shortages of Australian permanent resident graduates willing to do these jobs. In 1995-96, a total of 980 migrated to Australia for employment. They were mainly employed in Queensland and Western Australia, the two States with medical workforce numbers per 100,000 population significantly below the national average. In 1996-97, the number of TRDs who arrived in Australia for employment increased to 1,597.

8. Indicators of a workforce in balance

A medical workforce in balance in a geographic area or health care institution has neither signs of significant workforce excess or significant workforce shortage. However, there may be segments within an otherwise balanced workforce where there are clearly shortages, eg. doctors unwilling to undertake home visits late at night, to work every weekend, to undertake locum work far from home, and to work in the public hospital system for extended periods.

In the international benchmark literature, a medical workforce in balance in a particular geographic area or health care service, and considered a suitable benchmark, has the following features:

- It is 'lean', ie. the workforce is adequate to meet population need without significant evidence of shortages or poor health outcomes, and is at the lower end of provision in terms of numbers of active doctors per 100,000 population compared with other areas and similar populations.
- The price of medical services has not been forced down to the floor price, nor has been set at a level high enough to discourage patients because the practitioners are overworked. One might therefore expect that in a locality where the medical workforce is in balance that, while health card holders and disadvantaged people might be bulk-billed, GPs should successfully be able to charge a co-payment to patients who are financially well-off. However this would be influenced by the degree of entrepreneurial action within the locality by individual practices wishing to increase market share.
- Doctors working long hours are doing so by choice and not necessity, and doctors working short hours are also doing so by choice and not because of under-employment.
- There is general (but not universal) satisfaction with remuneration, hours of employment, patient care provided and health outcomes.
- It is an efficient workforce where there are waiting times accepted by the community.
- Workforce growth is in line with need indicators such as population growth, ageing of the population, and research and technology advances which improve health outcomes.

Issues for discussion and feedback are:

- Most medical specialties claim to have workforces in balance or suffering from small shortages. What appear to be shortages measured by hospital waiting times in certain specialty areas are claimed to be mainly due to funding restrictions by hospital authorities, rather than inadequate workforce capacity.
- In primary care, as already discussed, the GP workforces closest to being in balance may be the large rural centres, namely Albury-Wodonga, Dubbo, Lismore, Orange, Port Macquarie, Tamworth, Wagga Wagga, Ballarat, Bendigo, Shepparton-Mooroopna, Bundaberg, Cairns, Mackay, Maroochydore-Mooloolaba, Rockhampton, Toowoomba, and Launceston. However, quite a number of the small rural centres such as Armidale, Bathurst, Nowra-Bomaderry, Morwell, Wangaratta, Gladstone, Noosa, Mandurah, and Devonport may also be adequately supplied. This will need further feedback and analysis.
- In a hospital, a medical workforce with low funded vacancy rates is seen to be in balance. However, excessively long hours worked (greater than 60 hours per week) by a significant proportion of the workforce, based on traditional practice, would appear to present risks for both optimum patient health outcome, and optimum provider health

outcome. This suggests that the traditional view of a balanced hospital workforce would fail some of the key indicator tests listed.