

NHI Note 4: Supply Constraints

1. Introduction

This research note provides an overview of the current situation in terms of the supply side resources available in the healthcare sector in South Africa. Combining the data from several databases indicates that there is no certainty about the exact number of nurses, doctors and specialists currently working in South Africa. The note commences with an overview of available data sources on the numbers of doctors and nurses and shows that the official sources provide an overestimate of GPs of up to 25,000 doctors. This also applies to nurses and specialists. This means that international comparisons of human resource ratios using official data for South Africa do not provide the correct picture. In short, South Africa is in dire need of human resources in the health sector. Various estimates of the number of doctors, specialists and nurses that would be required under an NHI are presented in the last section

2. Current Supply Side Situation

In order to understand normalised levels of human resources and infrastructure

required to serve the South African population under a scenario of universal coverage, this section provides a brief overview of the current situation, by referring to various sources of data. It is shown that most of the data sources overestimate the number of nurses and doctors currently practising in the country.

2.1 Nurses

Information from various data sources can be combined to get a picture of the total number of nurses, the breakdown by age and gender, by type and by province. The one source of data is the government's personnel and salary administration system (PERSAL). Other data sources that can be used would be the all media and product survey (AMPS), the Labour Force Survey (LFS) or data from the South African Nursing Council (SANC). The AMPS and LFS data are based on surveys, and the AMPS data estimated the number of nurses in 2007 as 150,000, but the number captured in 2008 was 256,000. According to the SANC there were 213,000 individuals registered as nurses in 2008. Both the AMPS and the SANC data seem to overstate the number of nurses in the country. The SANC data only report on registration, and many

of these could either not be working or may be working abroad.¹ A report by Solidarity² on the shortage of nurses contains a reference to a 2004 study by the HSRC which showed that 18% of nurses registered with the SANC were no longer practising. The LFS reported a number of 189,000 nurses in 2008.

The PERSAL data is probably the best source of information on active nurses, and the 2008 figure is 104,571 nurses in the public sector of which 47,834 are professional/registered nurses (RNs), 22,707 are enrolled/staff nurses (ENs) and 34,030 are enrolled nursing auxiliary/s/assistant nurses (ENAs). This means the number of nurses in the public sector in 2008 was 104,571. There is however no definitive information about the number of nurses employed in the private sector. The 2008 SANC figure is 82,000 nurses employed in the private sector, but it has already been pointed out above that the SANC data are overstated. The estimates of Discovery Health (DH) for the private sector for total nurses is 31,176, while the Hospital Association of South Africa (HASA) estimates that there are around 40,000 nurses in the private sector. The various estimates are shown in Table 1. It seems therefore that one can work with

1. The ANC NHI document (2009:20) states that: "...it is estimated that about 67% of nurse who trained in the period 1997 to 2005 do not appear on the South African Nursing council register...Some leave the country to seek greener pastures in countries that pay them higher salaries such as Saudi Arabia, Oman, UK, US, Canada and Australia."
2. Solidarity (2009). 'Nurse shortage in South Africa – Nurse/Patient ratios'. Report by Solidarity Research Institute, May 2009.

a figure of approximately 104,000 nurses in the public and 40,000 in the private sectors, giving a total of around 144,000 active nurses in the country.

2.2 Doctors

When looking at the number of doctors, one can use data from the PERSAL database or the Health Professions Council of SA (HPCSA). Neither AMPS nor LFS data seem to be reliable when looking at the number of doctors, which is understandable given that they are sample based. The upper limit of the number of doctors seems to be 35,988 registered medical practitioners, which is reported by the HPCSA. However, this number includes doctors who are registered in SA, but practise abroad and it seems to be a gross overstatement of the true number of doctors practising in the country.³

According to the PERSAL data, this indicates that in 2008 there were 10,653 medical practitioners (GPs) employed in the public sector in 2008. If one assumes that the HPCSA number of 35,988 doctors are correct, this should imply approximately 25,000 doctors in the private sector, but data obtained from Discovery Health (DH) and Medscheme indicate

Table 1: Total number of nurses

	Public	Private	Total (2008)
SANC	131,000	82,000	213,000
AMPS			256,000
LFS			189,000
PERSAL (Public) & industry estimate (Private)	104,000	40,000	144,000

that there are 7,298 (DH) or 7,396 (Medscheme) GPs, and 5,177 (DH) or 5,845 (Medscheme) specialists. Clearly, there cannot be 25,000 doctors in the private sector, given these estimates of DH and Medscheme. The public sector figure of 10,653 GPs has to be further adapted for the fact that some doctors work in both the public and private sectors. According to industry estimates, if one removes the double counting resulting from private sector GPs who also work sessions in the public sector, the number of GPs in the private sector drops to 8,027.⁴ The total number of GPs is therefore 15,325 (7,298 (DH) in the private plus 8,207 in the public sector). Clearly the reality is very different from the almost 36,000 estimate of the HPCSA. DH also believes that the number of 7,298 GPs in the private sector might itself be overstated, as this might include some

GPs who work in the public sector, but also do private work. They assumed this proportion to be around 5%⁵ and this would reduce the number of GPs in the private sector further to 6,917.

The number of specialists given by PERSAL for 2008 is 4,026. Industry estimates are lower at 3,099.⁶ DH estimates that there are 5,685 specialists in the private sector, but again they argue that this number includes public specialists doing some private work and if this is assumed to apply to 10%,⁷ then the number of specialists in the private sector is only 5,177. There are therefore either 12,475 doctors in the private sector (7,298 GPs and 5,177 specialists), or 12,094 (6,917 GPs and 5,177 specialists). 5,177 private sector specialists and 4,026 public sector specialists give a number of 9,203 specialists in the country. The

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3. *In the SA Health Review (2008:358), there is a reference to a recent announcement by the Registrar of the HPCSA that 11,500 health care practitioners would be erased for non-payment, including more than 6,300 emergency care practitioners and 1,942 medical practitioners and dentists.*
4. *Estimate of Deloitte.*
5. *Industry estimate.*
6. *Estimate of Alex van den Heever (2009, email correspondence on 1/10/09).*
7. *Industry estimate.*

Table 2: Estimate of number of active doctors

	Public (including private doctors doing sessional work)	Public (excluding part-time and sessional doctors)	Private	Private (excl. public)	Total
GPs	10,653	8,027	7,298	6,917	14,944
Specialists		4,026	5,685	5,177	9,203
Total number of doctors					24,147

Source: Various industry sources and PERSAL

information given above is summarised in Table 2.

There are therefore approximately 24,000 doctors (GPs and specialists) working in SA, if one examines all the various data sources (including industry estimates). Table 3 provides a summary of the current supply side situation in SA. These estimates will be used in the analysis below to calculate ratios and to get an idea of how many extra resources will be required under a NHI.

Table 3: Summary of supply side

	Public	Private
GPs	8,027	6,917
Specialists	4,026	5,177
Nurses	104,000	40,000

Source: Econex calculations based on industry sources and PERSAL data

Table 4: Public vs. private sector split

	General practitioners (%)	Medical specialists (%)	Nurses (%)
Public	27.4	24.8	58.9
Private	72.6	75.2	41.1

Source: Wadee & Kahn (2008:143)⁸

Table 5: Revised public vs. private sector data

	General practitioners (%)	Medical specialists (%)	Nurses (%)
Public	53.7	43.7	72.3
Private	46.3	56.3	27.7

Econex calculations

3. Public vs. Private

The problems with the various databases and the overstatement of the number of doctors in the private sector (in official sources), have led to a misperception about a "skewed distribution of human resources between the public and private sectors." Research based on official data sources, and reported by Wadee &

Khan shows the split between the public and private sectors in terms of human resources (see Table 4). Wadee & Kahn acknowledge that there is a "paucity of

data regarding the true public-private distribution" of healthcare personnel (2008:143). If one recalculates these relative percentages based on the data

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8. This research is based on the work of Sanders and Lloyd (2006), see SA Health Review (2007:143).

presented in the previous section, then the split is as show in Table 5.

Table 5 shows that the picture is very different when one has a better estimate of the number of doctors in the private sector. This indicates that the percentage of GPs in the public sector is higher, while specialists in the private sector exceed those in the public sector. In both cases (GPs and specialists), the distribution between private and public is fairly even and not grossly skewed towards the private sector as shown by other sources. While it remains true that doctors and specialists in the public sector serve many more people, the analysis in this section has shown that the distribution of human resources is different from the picture usually painted. Also in the case of nurses, the percentage of nurses in the public sector is higher (72.3%) than reported in Table 4.

4. Human Resources per 10,000 of the Population

According to the WHO data (as reported by Nedgroup Securities), there are 8 physicians per 10,000 population for SA (vs. 11 for Chile). One can compare this to the HPCSA data of almost 35,000 doctors, to see where this overstatement of the number of doctors per 10,000 population comes from. This overstatement of resources in the private sector is pervasive through all the documentation surrounding the NHI. Apart from the fact that less resources are allocated to the private sector than generally assumed, and the fact that the

public/private split is less skewed, the important implication is that there is much less resources for the whole system than generally thought.

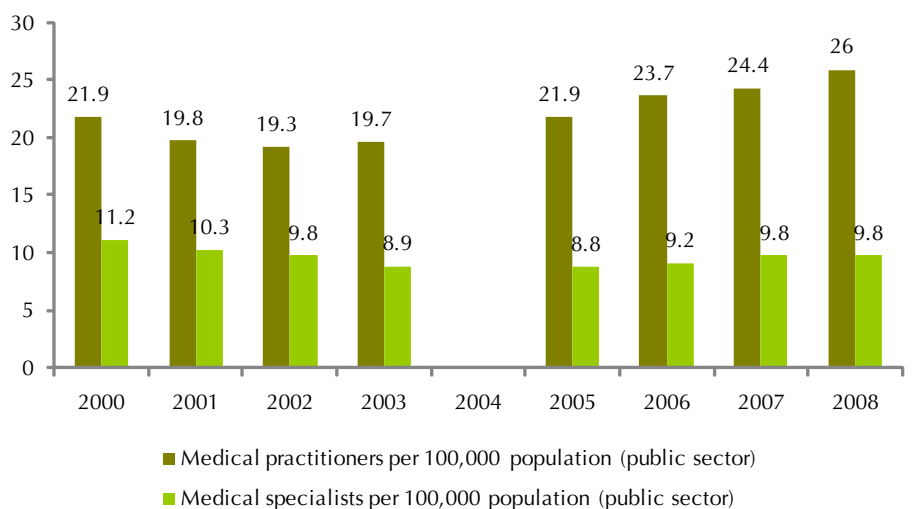
The HPSCA data report on the total number of 'medical practitioners'. If one assumes that this includes both GPs and specialists, then we know from the data presented above (based on industry sources) that there are 24,147 active doctors in SA. The mid-year medium population estimate for 2009 (StatsSA) is 49.32 million people. This would translate into a number of 4.89 (approximately 5) doctors per 10,000 population, which is much worse than the figure of 8 cited by the WHO and other sources. The number of 4.08 nurses per 1,000 translates into approximately 200,000 nurses, which is closer to the SANC data, but much more than the estimates of 144,000 nurses as shown in Table 5.

Figure 1 and Figure 2 show the ratios for GPs, specialists and nurses per 100,000 population as reported by the Health Systems Trust (HST, 2008).

Interestingly, the data from Figure 1 and Figure 2 indicate that although there was an improvement in the GP ratios between 2000 and 2008, the ratios of professional nurses, enrolled nurses and specialists have worsened over the period. This trend can be confirmed by looking at the increase in vacant posts for medical practitioners and professional nurses, which is shown in Figure 3.

Clearly there is a need for more human resource recruitment in the health sector. "Producing, recruiting and retaining health professionals remain key challenges facing but not confined to South Africa as these have been documented as challenges for

Figure 1: GPs and specialists per 100,000 population in the public sector, 2000-2008 (no data for 2004)



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the entire Southern African region and globally” (Wadee & Kahn).⁹

5. Human Resource Requirements under a NHI

The data presented above have shown that in the aggregate South Africa has a much lower ratio of total doctors to the population than commonly assumed, due to the fact that both the number of public and private sector doctors is overstated by the official data. We presented more realistic data on the private sector GPs and specialists and this showed that the split between the private and public sectors is not as skew as commonly believed and reported in the literature.

The need for more doctors is acknowledged in the ANC task team document on the proposed NHI (February, 2009:20): “Linked to the issue of nurses is the shortage of medical practitioners. Access to quality health care for the majority of the population is seriously hampered by inadequate supply of medical practitioners.” This is confirmed by the SA Health Review (2008:357) which reports on a staffing model developed by Daviaud and Chopra where they estimated that only 7% of the number of medical practitioners needed was available at the public healthcare facility level in South Africa. The provision of professional nurses at that level was closer to that needed at 94%, but with wide variations between districts.

5.1 Estimate of Human Resource Requirements – Method 1

Table 6 uses a rough estimate to calculate the numbers of GPs that might be required under a scenario where 100%

Figure 2: Nurses per 100,000 population, 2001-2008 (no data for 2004)

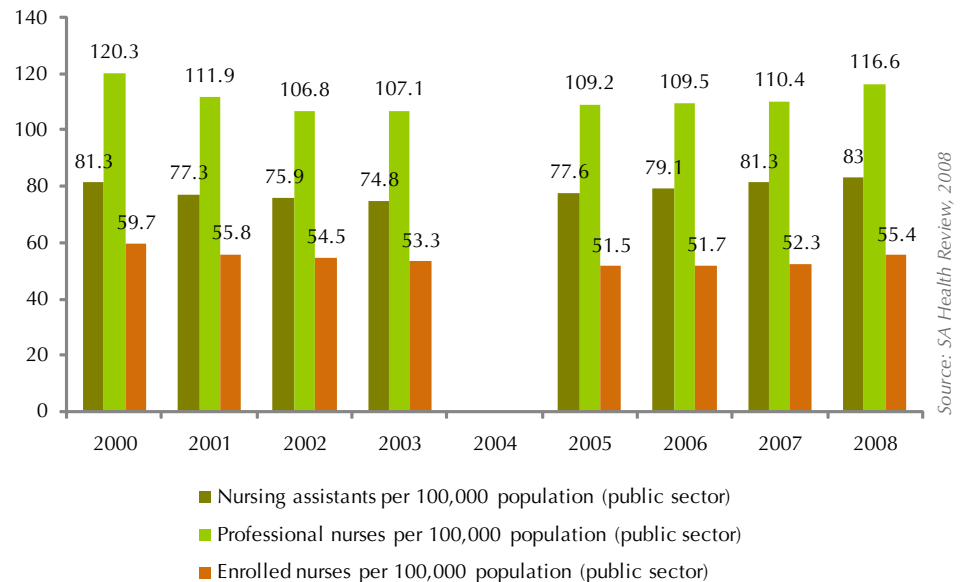
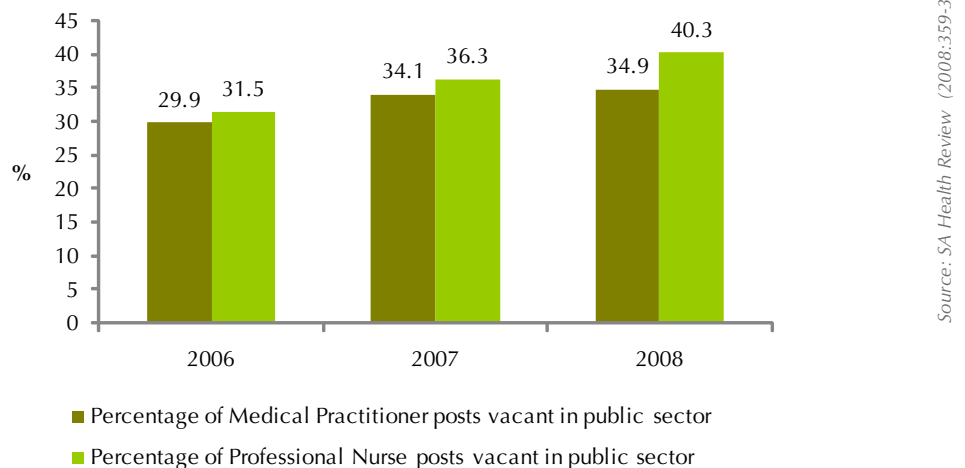


Figure 3: Increase in vacant posts, 2006-2008



population will be covered by the NHI (as planned). The table uses the mid-year Statistics SA medium population estimate for 2009 (49,320,500 people). It assumes a GP visit rate of 3.5 visits per person per year. This is based on a reported figure of 3.4 GP visits for the medical scheme population (see e.g. CMS, 2006:85). The NHI document (2009:73) reports that this number for the private sector is at least 3.5. It also reports that the utilisation of

“first level services” for the non medical scheme population fluctuates between 2.1 and 2.3 visits per year. The NHI document (2009:73) remarks on this difference between public and private utilisation rates as follows: “This is indicative of considerable unmet need for health services and has substantial implications for the planning of service delivery in a DHS under the NHI.” In line with what is argued elsewhere, i.e. that

9. Wadee, H. & Kahn, F., 2007. “Human resources for Health,” Chapter 9 in the SA Health Review 2007. (p.142)

Table 6: Number of GPs required

Number of GPs required (assumptions)	Actual production
Population	49,320,500
GPs per 100,000 (Current)	
Public sector (26)	12,823
Private sector (86)	42,415
Total (37)	18,248
GPs (Required under NHI)	
Visit rate	3.5
Total visits	172,621,750
GPs required	25,164
Increase in GPs required	10,220 ¹⁰

Source: Econex calculations

there is an unmet demand for quality healthcare (implicitly for seeing a doctor), it is assumed that the whole population can visit a GP 3.5 times per year. The NHI document (2009:103) uses as an example 3 visits to GP per year for a single member household and 12 visits for a 4 member household.

Table 6 shows how many GPs will be required, using current ratios (i.e. 26 per 100,000 for the public sector, or 86 per 100,000 for the private sector). If the total of 37 per 100,000 is used, then covering 100% of the population means that one will need 18,248 GPs. However, this data do not say anything about utilisation. What we have assumed for utilisation, is that per capita visits per year equal 3.5, that a GP sees on average 4¹¹ patients per hour, works 5 days a week for 49 weeks (3,430 hours per year). In that case, covering 100% of the population would require 25,164 GPs, or an increase of 10,220 GPs. It is difficult to use this methodology for specialists as it is not clear what the per capita rate of visits might be under an NHI. The ANC document (2009:103) when referring to specialist consultations, only refer to: "Highly restricted using a managed care approach with GPs

acting as 'gatekeepers'...Number of visits kept as low as can be with recourse to appropriate and evidence-based clinical practice guidelines."

5.2 Estimate of Human Resource Requirements – Method 2

Another way of illustrating the demand for GPs, specialists and nurses would be to use the demand model developed by Econex to estimate the expected increases in demand under a comprehensive NHI. Our model shows an anticipated spike in the demand for doctors and specialists. It is clear that if coverage is expanded and co-payments are abolished, there will be a large increase in the demand for GPs and specialists. The anticipated size of the increase is dependent on the approach.

According to these lower estimates the demand for GPs will increase by 24.1% due to the combined influence of slightly higher levels of utilisation (a rise of 6.4%) and substantial increase in GPs' share of demand (16.6%) associated with the expansion of coverage. The elimination of co-payments will result in a further, but only very slight, increase in the levels of utilisation (0.7%) and an additional rise

of 5.9% in GP's share of demand. This will amount to a further increase of 6.6% in the demand for GPs. Cumulatively, the impact of the expanded insurance coverage and the elimination of co-payments is expected to dramatically increase the demand for GPs (a rise of 38.9% of current demand). If we assume that there is no excess supply of doctors under current levels of demand, it appears reasonable to apply this percentage increase to estimates of the number of doctors currently working in South Africa. According to this calculation such a scenario would require an additional 5,800 doctors. If we use the higher end estimates, more than 10,000 doctors would be required to meet the raised demand anticipated under NHI.

Although it is off a low base, an even steeper increase in the demand for specialists is expected. In terms of the low end estimates, the demand for specialist will rise by 55.8% following the expansion of insurance coverage and by another 14.4% on top of that after all user contributions and co-payments are abolished. The total increase in the demand for specialists attributed to the combined impact of these influences

10. 25,164 – 14,944 (see Table 2)

11. This seems to be a reasonable estimate based on Australian benchmarks for GP Registrars (see: www.csqtc.qld.edu.au)

Table 8: Targets proposed by the NHRH Planning Framework vs. actual production, 2002 to 2007

Category	Proposed annual national production (DoH, 2006)	Actual production					
		2002	2003	2004	2005	2006	2007
Medical practitioners	2,400 by 2014	1,212	1,296	1,399	1,511	1,196	1,122
Professional nurses	3,000 by 2011	1,652	1,553	1,716	1,533	2,027	2,342
Enrolled nurses	8,000 by 2008	2,771	2,308	4,273	4,565	4,816	4,758
Enrolled nursing assistant	10,000 by 2008	3,078	4,390	6,698	6,754	5,422	6,136

Source: ANC NHI document (2009: 150)

Table 7: Predicted changes in human resource requirements

	Higher end estimates		Lower end estimates	
	All insured	All insured and no co-payments	All insured	All insured and no co-payments
Nurses	28.5%	15.1%	68.1%	52.6%
GPs	159.4%	170.0%	124.1%	138.9%
Specialists	267.0%	293.6%	155.8%	178.3%

Note: 100% represents current levels.

is 78.3%. This would translate to a requirement of an additional 7,000 specialists under this scenario. Using the higher end estimate, the calculated gap is predicted to exceed 17,000 specialists.

5.3 Other Estimates

One can compare these estimates to a study by Van den Heever (2008:20)¹² conducted for the Development Bank of Southern Africa (DBSA), where he estimated that if one wants to adjust the staff headcount in the public health sector of 251,000 for population growth by 2007/08, a total staff complement of 315,087 would be required. This figure includes all health personnel, e.g. GPs, specialists, Pharmacists, Physiotherapists, Nurses, etc.

According to the DBSA study, just for the public sector (not under an NHI assumption) to function according to international benchmarks, it would

therefore need an extra 5,352 GPs and 150,591 nurses. This does not take into account any of the increased demand scenarios expected under an NHI.

5.4 Where Will These Resources Come From?

Clearly the proposed NHI will require a large increase in human resources. Data on the number of doctors and specialists obtaining degrees from eight SA universities show that numbers have been stagnant between 2004 and 2008.¹³ The government is aware of this problem of insufficient staff, and the ANC NHI document refers to the targets set in the National Human Resources for Health Planning Framework (DOH, 2006), which are shown in the table below.

These targets have not yet been reached and if the NHI is to be implemented over a short period, then other sources of doctors and nurses will have to be found.

6 Conclusions

This research note showed that official estimates of the number of doctors, specialists and nurses working in South Africa, are an overestimation of the true situation. This means that providing universal cover and a comprehensive benefit package to all under an NHI, would put severe strain on existing resources. We calculate that the NHI would require approximately 10,000 more GPs (with a lower estimate of 5,800), and approximately 17,000 more specialists (with a lower estimate of 7,000). South Africa's health human resource strategy needs to be informed by these facts. South Africa is not training enough personnel at this stage to meet current and future health demands. From the supply side requirements calculated in this note, it seems that even the goals set under the NHRH will not provide enough human resources for a comprehensive NHI.

12. Van den Heever, A., 2008. "A Roadmap for the reform of the South African health system," Final Report, 10 November 2008.

13. MBChB: 1,384 (2004), 1,272 (2005), 1,402 (2006), 1,108 (2007), 1,349 (2008). MMed: 197 (2004), 180 (2005), 201 (2006), 189 (2007), 217 (2008).