Human resources for health planning and National Health Insurance: the urgency and the opportunity

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The implementation of National Health Insurance (NHI) amplifies the urgent need for coordinated, comprehensive health workforce planning in South Africa. Planning for and estimating the cost of adequate human resources for health (HRH) is of paramount importance to a well-functioning health system. Planning is also a central requirement for a strategic purchaser of health services tasked with matching healthcare needs with the supply of services.

The NHI is likely to alter health staffing requirements in South Africa as it strives to improve quality of and equitable access to health care. Increased health-seeking behaviour anticipated under NHI implies increased need for all cadres of healthcare workers, particularly specialists and general practitioners (GPs), who are underrepresented in the public sector. The creation of the NHI Fund also provides the opportunity for much-needed HRH planning on a more systematic and regular basis.

At present there is no ongoing process for HRH planning and no single, high-quality, integrated data source in South Africa to enable such planning. A review of the available data, together with the limitations of these data, is presented. There are no publicly available, audited and regularly updated statistics on the number and mix of health workers available and required for South Africa's population.

This chapter considers both global best practice in health workforce planning and the South African context of critical shortages in order to recommend a way forward. The creation of a timely, accurate and integrated repository of human resources data is an essential first step. We recommend the creation of a multi-stakeholder structure tasked with the development of integrated plans that consider the health system as a whole, based on models that account for both supply-side dynamics and the need for services, and that explicitly model the interactions between cadres of healthcare workers.

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Introduction

There is inadequate public-domain health workforce planning in South Africa,[1] the impact of which is reflected in critical shortages and the maldistribution of resources. The last publicly available health workforce projections for South Africa's public sector needs were generated in 2011.[2] Modelling the need for and cost of adequate Human Resources for Health (HRH) is of paramount importance in South Africa because HRH make up almost two-thirds of total public health expenditure.[3]

National Health Insurance (NHI) amplifies the need for coordinated, comprehensive health workforce planning in South Africa, given the intention of a more integrated health system, and to improve equity, quality of care and access to services.[4] Increased health-seeking behaviour anticipated under NHI implies the need for expanded availability of all health workforce personnel, including specialists and general practitioners (referred to collectively as physicians), who are underrepresented in the public sector.[a]

The implementation of NHI also creates the opportunity to reconsider the structural mechanism for HRH planning, particularly because this is a central requirement for a strategic purchaser of health services tasked with matching healthcare needs with the supply of services. Rigorous planning for HRH is necessary to achieve optimal balance in the functional and geographical distribution of health staff,[5] and to ensure appropriate strategies to deal with shortages. Mechanisms to do so may include training, reorganising staff, efficiency improvements and/or purchasing of services from the private sector. Any intervention should be evidence-based, emphasising the need for meaningful planning tools. The intended structural changes to the health system, and the demands these changes will pose, make it imperative to learn from previous work and to build nuanced and rigorous tools and processes for system-wide HRH planning.

This chapter considers the implications of NHI for HRH planning in South Africa, including structures and processes, the different model typologies, model designs and data requirements. Within this framework, a brief reflection is offered on the different public-domain health workforce planning models and approaches used in South Africa over the last 15 years, and the currently available data sources.

Methodology

This chapter is based on a review of literature on workforce projection models and planning processes, a review of previous initiatives in South Africa in the public domain and a review of available data sources.

In 2013, Ono et al.[6] reviewed 26 health workforce projection models across 18 Organisation for Economic Co-operation and Development (OECD) member countries. Three countries, namely the Netherlands,[7,8] Australia,[9,10] and the United Kingdom,[11] emerged as exceptional in the way they approached the process of planning and data collection, and the models they used. The experiences of these countries, as well as Japanese[6,12,13] and Thai[14]

experiences, are relied on given the dearth of literature from low- and middle-income countries especially in Africa.[b]

Although this chapter focuses on health workforce planning in general, physicians are used to for illustrative purposes.

The review of previous work done in South Africa included the 2008/09 project by the Colleges of Medicine of South Africa (CMSA),[15] work done by Econex in 2009[16] and 2010,[17] the 2011 health workforce planning model by the NDoH as part of a larger process to develop a National Human Resources Strategy for South Africa[2] and work done to cost South Africa's public PHC system based on the World Health Organization model (Workload Indicators of Staffing Need (WISN)) for determining the correct mix and number of staff, as per the demand for services.

HRH planning and NHI

The implementation of NHI both accentuates the urgent need and creates the opportunity for a more centrally, coordinated approach to health workforce planning in South Africa.

The urgent need

The absence of effective HRH planning in the current system is illustrated by the dire staff shortages in the public sector, geographic maldistribution, and challenges in the interface between the training platform and the public service. We briefly provide examples of each of these.

The collapse of oncology services in KwaZulu-Natal[18] and North West[19] in 2017 and 2018 respectively, are examples of severe shortages that have threatened the public sector's service delivery capacity. These point both to systemic challenges and to the long-term effects of an absence of effective HRH planning. These shortages have also severely compromised the training platform, affecting not just current but also future supply.

The geographic maldistribution of HRH can be clearly seen using the example of anaesthetist services, which are required for the provision of adequate surgery services. Three provinces have single digit numbers of public-sector anaesthetists: Mpumalanga, Limpopo and the Free State. This creates an inequity in access to surgical care, and pressure on surrounding provinces.

In 2018, a large number of junior doctors were not placed in the public sector to complete their internships and community service because these posts were not funded by the provinces.[20,21] While aggravated by severe cuts in provincial health budgets, this disconnect between the training platform and the available budget for HRH illustrates the current lack of co-ordination and planning.

NHI accentuates all these issues. The imperative of access to quality care brings into focus current (and future) shortages. The goal of improved equity will require interventions to remedy current geographic maldistribution. The planned restructuring of the health sector requires planning tools which can be used to assess the impact

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of alternative policy options on the country's HRH requirements, including interventions that relate to the training platform.

There are still many unknowns regarding how NHI will be implemented. Areas of uncertainty include the nature and scope of the minimum benefit package, the extent to which existing private financing mechanisms will be permitted to continue, and the extent to which the NHI Fund will purchase services from private providers. All of these decisions require effective HRH planning tools to assess the achievability and sustainability of NHI policy.

The opportunity

The creation of the NHI Fund introduces a purchaser-provider split into the South African health system, with the fund acting as a single purchaser. The role of a purchaser in a health system is to match the supply of and demand for healthcare in a manner that is equitable, deciding what care to purchase, from whom and on what basis. HRH planning is a critical tool to enable strategic purchasing.

In addition, the move towards a more integrated health system under NHI will require consideration of HRH resources in both the public and private sectors. This is relevant because the South African private sector shows dramatically higher physician-to-population ratios[16] than the public sector, given the highly resourced nature of the private-sector market together with non-financial factors that often drive doctors away from the public sector.[22] Integrated planning tools will help to illustrate ways in which the resources across the two sectors can be leveraged to the benefit of all South Africans.

There has not been a comprehensive health workforce planning initiative that considers supply, demand and unmet need in the entire health system. Previous private sector work did not fully take into account the complexities of public sector delivery,[17] while public sector-driven planning models focused mainly on planning for public sector need and context (e.g. the 2011 HRH model[2]). Separate consideration of the two systems ignores overlaps (public sector doctors can apply to work in the private sector while being employed full-time in the public sector, under Remunerative Work Outside Public Service or RWOPS), movements between the two sectors, and the policy imperative to consider re-organisation of the system as a whole. Any restructuring of the health system has HRH implications. HRH models and projections can be used to assess the impact of restructuring on the future gaps between the need for and supply of resources. An example of health system restructuring is the launch of the District Clinical Specialist Team (DCST) model, which aims to get teams of specialists to provide mentoring in primary health care (PHC) and less-specialised hospitals, while also providing clinical services for highly complicated cases.[23] This approach changes the planning needs for specialists, as it focuses more on a task-shifting and mentorship approach that could reduce reliance on specialists across the country.

NHI is the largest-scale redesign of the South African health system that has ever been considered. The opportunity to consider HRH planning as part of that redesign is clear and considers ways to institutionalise and regularise planning, the possible approaches to HRH modelling and approaches to improve the availability of timeous and accurate data. Each of these aspects is considered in turn.

Institutionalising HRH planning

HRH planning in South Africa has historically been an *ad hoc* process. It is also not clear from recent policy and market processes that there is a clear view on how to approach HRH planning in South Africa in future. The Health Market Inquiry (HMI) has recommended the establishment of a supply-side regulator,[24] where the function of HRH planning would be well-placed (although this is not mentioned). The draft Medical Scheme Amendment Bill makes provision for the Council for Medical Schemes to house the data needed for HRH planning, although it is not clear that they, as a regulator of private healthcare funders, are best placed in the health system to do so. The draft NHI Bill is largely silent on HRH planning.

This section considers the need for ongoing processes, the need for the creation of structures to undertake HRH planning and whether separate processes are required for different cadres of the workforce.

The need for ongoing processes

Health workforce planning needs to be actively and continuously managed in order to prevent supply-demand gaps from emerging,[1] as has occurred in South Africa. This was recognised in the NDoH HRH strategy which pertained to the period 2012/13–2016/17, but with the intention to take a 2030 view, as per the National Development Plan, with five-yearly updates to the strategy. There has been no update since the previous plan expired. The absence of an ongoing process in South Africa is reflected in the recent call from the South African Committee of Medical Deans (SACOMD) for the establishment of a joint workforce planning process to ensure integration between the training platform and the availability of posts.[1]

A review of international best practice indicates that ongoing processes are ubiquitous, although there are variations in the entities tasked to do the planning.

Who does the planning?

Planning can be conducted by a series of expert panels set up by government (Japan), by a multi-stakeholder government-industry committee (Netherlands), by a more permanent, dedicated national planning agency or by the government itself. Both the United Kingdom and Australia have transitioned from having dedicated agencies to locating the planning function within government.

The Japanese government has set up various commissions and expert panels to conduct health workforce planning for different categories of healthcare workers. The panels have generally been housed in the Department of Health.[6] Estimates produced by the Japanese government commission were also tested by academics using their own estimation models.[12,13] This is an advantage of work being placed in the public domain and should ultimately lead to more robust models and results. In the United Kingdom, the Centre for Workforce Intelligence (CfWI), a dedicated HRH planning institution, was responsible for all health workforce planning and analysis from 2010 to 2015. The centre was closed in March 2016, with staff transferred to the Department of Health and Health Education England (located in the NHS).[25] The move appears to be a political decision, and there is little information yet on the effectiveness of this in-sourced approach.

Australia had a dedicated national health workforce planning agency, Health Workforce Australia, from 2008 to 2014.[26,10] It was established as a statutory body. In 2014, the functions of this body were transferred to the Department of Health.

It appears that the establishment of a separate body is a useful first step to ensure focussed effort on establishing process, data collection and model building. Once established, it may make sense to move this functionality back to the Department of Health.

The approach taken in the Netherlands seems most suitable to South Africa. Their Advisory Committee is composed of three groups of stakeholders: medical professionals, medical training institutes, and health funders. The outputs are then discussed by relevant specialised platforms (sub-committees) of the Advisory Committee.[8] The Committee is set up to advise the Dutch Government on how to plan and budget for HRH. This approach aligns with the recommendation in the South African NDoH Human Resources Strategy for the Health Sector 2012/13–2016/17 that a separate agency be established to take responsibility for South Africa's health workforce planning and strategy.[2] This recommendation has not yet been implemented. This approach also aligns with the recent call from SACOMD.

Which health professionals are covered?

Another dimension to consider is which healthcare professionals are covered, and whether there are separate processes for different disciplines or an integrated approach. The United Kingdom and Australia have favoured an integrated approach, planning for a wide range of health (and social care) professions under a single entity, while the Japanese have separate processes for the different cadres.

We favour an integrated approach given the need for multidisciplinary teams in the health system and changes in scope of practice through task shifting or the emergence of new cadres.[27] There is a complex relationship between fluctuation in the number of different categories in the health workforce, and the question of whether the overall supply meets the health needs of the population being served. Generally, separate planning processes do not allow for an accurate interplay between cadres.

In the South African context, the Econex work considered nurse,[28] general practitioner and specialist numbers separately,[17,29] while the CMSA work considered only specialists.[15] The national health workforce planning model was more comprehensive, covering 100 medical professions, including physicians, nurses, dental practitioners, allied health professions (such as occupational therapists and physiotherapists) and community health workers.[2] This was an appropriate approach given the multi-disciplinary team-based approach foreseen in the NHI Green[27] and White Papers.[4] These policy papers make it clear that the public PHC sector will remain a nurse-driven service, with doctors and specialists using hospitals as their base, but still doing outreach services.

Designing an HRH model

Effective HRH planning requires modelling work to project the supply of health professionals, and to consider its adequacy. In this section we consider model typologies, the components of supply-side modelling, and the components of either demand or need modelling, and the use of scenarios in HRH modelling and the creation of staffing norms from HRH models.

Health workforce planning model typologies

It is useful to compare the HRH modelling that has previously been done in South Africa to the types of models that can be identified in the international literature. At least four health workforce planning model types can be identified, of increasing complexity.[6,30,31]

➢ *Supply-side focused models,* with simple demographic assumptions to control for demand-side factors (population size, and in certain cases, simple utilisation assumptions);

➢ Supply-side and *demand-side* (estimated gap) models, with demand-side assumptions moving beyond simple demographics, and more detailed utilisation assumptions;

➢ Supply-side and *need-based* (estimated gap that considers need) models that move from utilisation-based demand to more nuanced considerations of demographic and morbidity trends;

➢ An extension of the third model type (supply-side and demand-side, sensitive to need) that also includes *specific service targets* or specific health outcome targets. This approach allows for a more integrated consideration of "numbers, mix, distribution, productivity and outcome".[31]

All of the previous work done in South Africa falls into the first category of models. The aim of the 2008/09 project by the CMSA was to research the number of specialists and subspecialists within South Africa and to calculate whether these numbers are sufficient[27] by comparing South Africa's supply of specialists per 1 000 population with international benchmarks[15] (not taking cognisance of factors driving need or demand in South Africa).

Work done by Econex in 2009[16] and 2010[17] was similarly supply-side focused. By the authors' own admission, it was not "a complicated needs or demand-based model".[17] The aim of the model and overall analysis was to contribute data on nurse, doctor and specialist numbers to the NHI discussion.

The 2011 health workforce planning model by the NDoH was part of a larger process to develop a National Human Resources Strategy for South Africa.[2] As with the other two models, it stopped short of considering changes in healthcare service needs over time.

Given the shortages of HRH resources in the South African context, it is likely that demand is not a good reflection of the underlying health needs of the population. There is therefore the risk that if planning is based on gaps between supply and demand, existing inequities in the system will be perpetuated. An estimated gap approach that considers needs is therefore better suited to the South African context.

Supply-side components

The main components on the supply side of a model should include data on the current workforce stock; full-time equivalent(s) per category of health worker; controls for international migration; exits through death and retirement; and data on the number of health workers in training. These pillars are common features in the planning of most countries surveyed.[6] Doing the modelling by

age and sex of the workforce is key to allow for consideration of feminisation and ageing.

Although South Africa has a young population, similar to that of many other middle-income countries, its health workforce population mimics the dynamics of high-income countries and is likely to be affected by the same factors present in those countries. This includes increased feminisation of the workforce[12,32] (and the implications of this on specialty choice and working hours), and the declining number of health workers available as a consequence of both an ageing workforce and changing retirement patterns.[33] At the same time, the South African market for health workers is subject to some of the influences observed in other low- and middle-income countries, for example, pull factors that make physicians leave for high-income countries with better working conditions.[6]

Demand and need components

Demographic developments are typically taken into account by using data on population projections and patient registration (e.g. Netherlands).[8] Sociocultural developments based on expert estimations and empirical data (if available) are also frequently used.

The Australian approach projects population size and links current and future utilisation to demographics (age and sex cohorts). Service utilisation (or changes in utilisation) are derived from changes in population composition.[10] In addition, current unmet demand for care in the baseline period is also considered.[10]

In the United Kingdom, changes in need are based on consensus expert estimations.[34] All three countries used a panel of experts to provide inputs on epidemiological and other factors driving need.[8,10]

Interestingly, the Thai approach to physician modelling (1972–2004) was typically informed by demand-side projections targeting specific service targets, rather than being supply-led.[14] Regardless, however, of initial emphasis, ultimately both supply and demand have to be considered.

Planning for change through scenarios

Apart from the baseline projection, best practice international models typically include three to four scenarios.[8,10,34] Scenarios can be used to illustrate the impact of future uncertainty and are well suited to areas such as epidemiological developments, sociocultural developments, innovation and technological developments, changes in demand and changes in productivity.[8,10,34] They can also be used to illustrate the impact of policy interventions such as health reforms, changes in the use of foreign doctors, task shifting, and changes in work hours. Complex scenarios allow the interactions between different forces to be illustrated. In this way, planning tools can be used to aid decision-making by enabling comparison between interventions.

Most of the models reviewed included scenarios dealing with specific factors impacting on physician productivity, including technological changes. In recent years, some models have also started to account for task-shifting in the form of horizontal and/or vertical substitution; for example, substitution between doctors and other health staff such as nurses or trained assistants (clinical associates in the South African context).[1] Given South Africa's shortage of medical professionals,

these substitutions become relevant when planning for NHI. This may mean that some cadres will need their scope of work expanded so that they can be suitably accredited, and so that the NHI Fund is able to purchase services from these providers individually or from within multidisciplinary practices or groups.

Using HRH models to create staffing norms

HRH model projections linking supply and either demand or need should be translated into staffing norms in order to link planning and implementation. Clear staffing norms could help to ensure equity in HRH distribution.[4] They may also be useful to plan for incremental coverage, moving from expressed demand (minimum level) to need (more comprehensive coverage). However, norms may oversimplify the complexities of health delivery, and retention of some flexibility in the system is desirable.

One of the activities suggested in the NDoH's HRH strategy was to develop detailed staffing norms for tertiary, regional and district hospitals "to ensure a balanced health system".[2] Although there was a large project to develop these norms following release of the draft HRH strategy, it is not clear that the norms were ever implemented.

Another example of staffing norms is the World Health Organization model: WISN. Work has been done to cost South Africa's public PHC system using WISN to determine the mix and number of staff. Levels of compliance with WISN are very low (7% of clinics in March 2016).[35] A study done by the Medical Research Council (MRC) in North West province, found the WISN model to be significantly more expensive than norms suggested by the MRC.[36] This example illustrates the importance of linking staffing norms to broader HRH planning processes and modelling.

Sources of data

The lack of a single, integrated source of HRH data is an impediment to HRH planning in South Africa. We contrast data availability in South Africa with international practice.

Potential data sources for South African HRH planning

Currently, South Africa's public and private health sectors do not regularly provide publicly available data on their HRH counts and demographics. There is no single repository of health workforce data that includes all the necessary fields of interest, neither within each sector nor for the country as a whole. Rather, data are housed in a variety of institutions, from regulatory bodies such as the Health Professions Council of South Africa (HPCSA) to bodies such as the Board of Health Care Funders (BHF), which is tasked with issuing practice numbers to enable healthcare providers to claim from health funders. Given the siloed nature of the public and private health systems in South Africa, any proper health workforce planning model will require data from several different organisations, government datasets and regulatory bodies. This makes the process cumbersome and difficult to replicate regularly.

Regulatory bodies such as the HPCSA and the Nursing Council should have the full list of registered health professionals, by type. These datasets, however, do not provide an up-to-date view of whether the professional is located in the public or private sector (or both). There are also concerns about the accuracy of these datasets in terms of emigration, death and retirement.[7] Professional registration

data should act as the foundation for the total HRH count. Further data are required to improve accuracy and separate out the public sector from the private sector, those who are registered but not practising, and those who are out of the country either temporarily or permanently.

Payroll information from public provincial departments of health, via the PERSAL (government payroll information) system, can be used to identify registered health workers employed in the public health system. On their own, the PERSAL data do not contain sufficient information on health worker type (for example, the data do not differentiate between medical specialties).

In the private sector, the main data source could be the BHF database. Importantly, the BHF database also distinguishes between group and individual practices, allowing for a more granular understanding of the number of health professionals in the private sector. This database could be triangulated with medical scheme claims data from the largest medical schemes to ascertain which of the professionals in the BHF database are still practising and whether full-time or part-time.

To create a South African baseline dataset for the system as a whole, these individual datasets will have to be collated and linked (in a manner cognisant of data sensitivities). While the *South African Health Review* does report on some HRH data year on year, the data sources are likely the same as described above and therefore come with the same cumbersome data collection and collation issues and quality concerns.

The recent draft Medical Schemes Amendment Bill (2018) proposed that a central repository be introduced of all health-related data for the country.[38] This would significantly improve the ability to do robust planning.

Data sources used internationally

Two main data sources are typically required:

➢ Supply data: Best practice models tend to draw heavily on healthcare professional surveys or censuses of specific categories of healthcare workers. These censuses provide nuanced information on work hours, movements in and out of the workforce, and how societal gender norms interact with the aforementioned. Inputs from expert panels, particularly on demand-side and epidemiological drivers, are also frequently used,[7,34] as are data from training institutions, such as data on medical school intake, medical school graduates and fellows in medical schools (for specialisation).[7,34] In countries like Australia, where a high proportion of physicians are immigrants, data from the government department tasked with managing immigration may also be required.

➢ Demand and need data: The data required to model demand and need can be obtained from national population projections and data on current utilisation (e.g. hospital episode statistics).[6,10,34] Expert estimates on need and demand can supplement these administrative and other data.

Conclusions and recommendations

Although there have been at least three HRH modelling exercises in the public domain in South Africa, there is no evidence that the findings and recommendations flowing from these models have been implemented. The models and some of their assumptions are likely to have become outdated as epidemiological, scope of practice, market, and public provision dynamics have changed. In addition, all previous work has been supply-side focused with limited consideration of the future adequacy of the supply.

The absence of effective planning is evident in the dire shortage of physicians, the collapse of certain specialist services and a disjoint between the training platform and the public service.

The proposed NHI in South Africa, coupled with the lessons from international best practice outlined in this chapter, lead to the following recommendations:

➢ A regular HRH planning process that includes both the public and private health sectors needs to be institutionalised. We recommend the establishment of a separate health workforce planning agency. The establishment of a body tasked with ongoing planning would create a structure within which data can be housed securely.

➢ The experience of other countries suggests that an inclusive approach that combines key stakeholders and experts, is the gold standard for HRH planning. This also necessitates the inclusion of higher training institutions to ensure greater coherence between the training and the service-delivery platforms.

➢ All data and outputs from this process need to be publicly available and open to scrutiny, and recommendations flowing from this process need to be integrated into the management of the health system.

➢ Our recommended approach to HRH modelling is an estimated gap model that pays careful attention to the need, and not just the demand, for health services. Modelling should reflect all cadres of health workers given the policy imperative for multi-disciplinary service delivery. The use of scenarios is recommended to enable the exploration of the impact of policy choices and interventions to address shortages.

➢ South Africa has a long way to go in terms of data readiness for robust HRH planning. Given the complexities outlined above, there is a need to move away from the siloed nature of HRH data in the South African health sector. A centralised database should include professionals in both the public and private health sectors and should reflect all cadres of health workers.

➢ A simple initial change that could aid HRH planning substantially is to capture more data on health workers in the PERSAL system (for example, RWOPS status and academic qualification).

This review of best-practice HRH planning experiences shows a need for more research on HRH planning processes in countries comparable to South Africa, e.g. other African or other middle-income countries. Available information on how to go about HRH planning is dominated by insights from the experiences of high-

income countries. However, international best practice is well within the reach of the South African health system.

South Africa's NHI reforms with all its requisite policy change and system reorganisation, provides a unique opportunity for effective HRH planning which will be central to the NHI Fund being able to carry out its strategic purchasing functions.

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