Primary healthcare delivery models for uninsured low-income earners during the transition to National Health Insurance: Perspectives of private South African providers

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Background. The proposed National Health Insurance (NHI) system aims to re-engineer primary healthcare (PHC) provision in South Africa, with strategic purchasing of services from both private and public sector providers by the NHI Fund. Currently, while access to the private sector is primarily restricted to high-income insured earners, an important proportion of the low-income segment is choosing to utilise private PHC providers over public sector clinics. In recent years, a number of private providers in SA have established innovative models of PHC delivery that aim to expand access beyond the insured population and provide affordable access to good-quality PHC services.
Objectives. To describe the current landscape of private PHC clinic models targeting low-income, uninsured earners and the role they might play during the transition to NHI.
Methods. Key informant interviews were conducted with representatives of a sample of private PHC provider organisations providing services to low-income, uninsured earners with clinics – beyond the traditional private sector general practitioner model. Organisations were asked to describe their service delivery model, the population it serves, the PHC services offered and the financing model. Written responses were captured in Excel and coded manually, and the results were thematically analysed.
Results. Of the eight organisations identified, most have actively engaged strategies to ensure the provision of affordable quality care. Within these strategies, scale is an important pivot in spreading fixed costs across more paying patients as well as task shifting to lower cadres of healthcare workers. Access to government medicines and laboratory tests is an important factor in achieving lower costs per patient. Together, these strategies support the sustainability of these models.
Conclusions. We have provided an exploratory analysis of private PHC service delivery models serving the low-income, uninsured patient population, establishing factors that increase the efficiency of such service delivery, and delineating combinations of strategies that could make these models successful both during the transition to NHI and during full-scale NHI implementation. A clear regulatory framework would act as a catalyst for further innovation and facilitate contracting. These existing models can enhance and complement government provision and could be scaled up to meet the needs of expanding PHC under NHI. Understanding these models and the space and parameters in which they operate is important.

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A robust, well-functioning primary healthcare (PHC) system is the mainstay of any healthcare system, and South Africa (SA)'s requirements are no different. It is estimated that properly delivered PHC services could greatly reduce the burden of premature mortality and disability by 21 - 38% in children aged <15 years and by 10 - 18% in adults.[1] Furthermore, improving health system quality and health service utilisation could avert 55% of excess mortality in low-income and middle-income countries relative to settings with strong health systems.[2]

The proposed National Health Insurance (NHI) system aims to re-engineer PHC provision in SA, with strategic purchasing of services from both private and public sector providers by the NHI Fund, the sole purchaser of health services under NHI.[1] It is noted that contracting in and contracting out of private health practitioners (alongside PHC provision by the established public sector PHC clinics) will be essential to strengthening and ensuring integrated services at the PHC level, in order to improve access to healthcare for the population while reducing the burden of disease.[1]

Currently, access to the private sector is primarily restricted to high-income earners in SA through private medical insurance schemes. However, while only 16.2% of the SA population is covered by costly private medical insurance schemes and predominantly utilises private providers,[1] an important proportion of the low-income segment of the SA population is choosing to access private PHC providers for a fee instead of accessing free care at a public sector clinic. It is estimated that 28% of SA households' normal place of consultation is the private sector.[3] In particular, it was estimated in 2006 that among those who were uninsured and with a household income <ZAR6 000 a month, ~22.4% of their most recent outpatient visits were to private general practitioners (GPs).[4] This is presumably due to greater perceived or experienced quality of care received at private PHC providers, reducing the need for additional visits, as well as shorter waiting times, which together decrease cost to patients in accessing PHC.

In recent years, a number of private providers in SA have established innovative models of PHC delivery that aim to expand access beyond insured medical scheme members and provide access to good-quality PHC services to under-served populations. These models move beyond the predominantly single-practice GP model

that has traditionally served the private market and include nurse-run and owned private practices, non-governmental organisation (NGO)-run PHC service centres with partial government support, and private doctors recruited by the National Department of Health (NDoH) or donors to offer specific services (e.g. HIV testing and treatment), among others. These models have varying degrees of external support: some rely on access to in-kind contributions, some are reliant on donor or government funding, while others are entirely self-sufficient business entities relying on revenue and investor capital.

These private models of service delivery, if certified and accredited, may provide contracted-out PHC services to the populations they serve under NHI. Under NHI, the Contracting Unit for Primary Healthcare (located at the district level) will contract with certified and accredited public and private healthcare providers.[1] In order to be accredited and reimbursed by the NHI Fund, the service provider must be certified by the Office of Health Standards Compliance, and, where relevant, provide proof of registration by the Health Professions Council of South Africa, the Nursing Council of South Africa, the South African Dental Council or the South African Pharmacy Council. The service provider must also be able to provide the minimum required range of personal healthcare services specified by the Minister of Health; allocate the appropriate number and mix of healthcare professionals to deliver the healthcare services specified by the Minister; adhere to treatment protocols and guidelines (including medicine prescribing); adhere to referral networks; submit information to the National Health Information Repository and Data System; and adhere to the national pricing regimen for services delivered.[5]

Objectives

The objective of this study was to describe the current private PHC delivery landscape outside the traditional GP model of private PHC. In particular, the objective was to identify and describe organisations targeting low-income, uninsured earners, a market that has not traditionally been the focus of private providers, and explore the role these organisations might play during the transition to NHI through thematic analysis of key informant interviews. The study forms part of a larger analysis to assess the cost and outcomes of these models of private PHC providers operating in this market relative to PHC service delivery at public sector clinics in SA for a defined subset of PHC services (HIV, tuberculosis (TB), diabetes and hypertension), with this study informing the selection of models to be included in the larger analysis.

Methods

The core selection criteria for inclusion in the PHC model evaluation were that the organisation:

- is a PHC service provider rather than a healthcare funder or managed care organisation outside of PHC
- offers PHC services, including treatment services, for at least one of the conditions/diseases identified for the broader study, namely HIV, TB, diabetes or hypertension
- primarily services the low-income, uninsured population, and has sites located appropriately for this population
- aims to grow the model beyond a single clinic.

Organisations were initially selected using purposeful sampling. This involved desktop research compiled in June and July 2017 using websites, news sites, published literature and grey literature, with search terms such as 'primary healthcare', 'private', 'South Africa', 'innovation', 'provider', 'user fee', 'low income' and 'uninsured'. This desktop research was also augmented with organisations known to the authors or collaborators. Additional providers were selected for interview through snowball sampling following recommendations from the initial sample of key informants until no further new providers were identified or responded. Sampling was closed at the end of August 2018.

Key informant interviews were conducted between March and August 2018 with representatives of those private PHC provider organisations that met the above selection criteria. The key informants were founders, chief executive officers or senior managers who were involved with the strategic management of the organisation. Prior to the scheduled interview, identified key informants were approached via email, provided with information about the study and asked whether they would like to participate. Written informed consent was obtained from each interviewee who agreed to participate, including permission to audio-record the interview.

A semistructured interview guide with interviewer prompts was used for face-to-face interviews, and summaries of responses were captured on paper interview notes. The interview lasted between 60 and 120 minutes, and between two and four of the authors were present at each interview to ensure that information was consistently captured. During the interview, key informants were asked to describe their organisation with particular reference to the PHC services it offers, the population it serves (demographics, location, employment, insurance status, etc.) and the financing model, together with a general description of the model (site infrastructure, information and other systems, number and levels of staff, and patient numbers). We also asked respondents to describe factors that had facilitated or complicated the organisation's work so far.

Written responses from all the interviewers were captured in Excel 2016 (Microsoft, USA) and coded manually. Content analysis was guided by the interview framework, and coding themes were identified *a priori* based on the thematic areas included in the interview guide: financing model, staff, scope of services, size and visit volumes, target population, ease of access, and patient management systems. Additional sub-themes were included as they emerged and, where necessary, the audio recording was used to corroborate information.

Following this exercise, a workshop was held with all authors to ensure the consistency of the coded data and further in-depth analysis was conducted to define the focus of the analysis and determine key themes. In order to frame the key themes within the quality criteria planned to be used during the transition to NHI, these key themes were in part informed by the NHI accreditation criteria listed in the introduction above, while others were derived from the data. However, accreditation and contracting under NHI was not a major focus of this analysis. Table 1 summarises how these accreditation criteria match to one or more of our themes.

During the workshop, we also used information from the interviews to rank each organisation under each key theme. This was done by determining which organisations had the least of that particular characteristic and then ranking the organisations in order towards the one that had the most. For example, under the theme 'Degree of independence of grant, donor and/or government funding', organisations that were entirely reliant on user fees and commercial or private funding were ranked the most independent, whereas a public sector clinic was ranked the least independent as it was entirely reliant on government funds. For organisations that had a mix of funding, the funding-split proportions provided during the interviews were used to rank them accordingly. A typical public

Table 1. NHI Bill accreditation stipulations and matching theme

NHI Fund Bill stipulation	Matching theme
Minimum service package	• Scope of services (TB, HIV, diabetes and hypertension only) • Full scope of PHC services
Appropriate number and mix of staff	• Highest healthcare worker cadre available on average visit
Statement of performance expectation in respect of patient management, volume and quality of services delivered, and access to services	• Quality of care • Patient visits/clinical staff per month • Flexibility of access: opening hours, waiting time, location
Submission of information to NHIRDS	• Sophistication of patient management system *Interoperability with NHIRDS not included, as no specifications available yet.*
Adherence to national pricing regimen	• User fee amount *Adherence to future NHI prices not included, as these have not been determined yet.*
Adherence to treatment protocols and guidelines	Not included *All models mentioned that they abide by current treatment protocols and guidelines. We will test this adherence in future patient-level research.*
Adherence to referral networks	Not included *We did elicit referral pathways for the main services included in the study. Currently, however, models' referral networks are constrained by patients' ability to pay for additional private sector services.*
	Additional themes relating to funding model and scale of operations: • Degree of independence of grant, donor and/or government funding • Volume dependence of business model • Government in-kind contributions • Socioeconomic status of target population profile (insurance and employment status) • Number of sites

NHI = National Health Insurance; TB = tuberculosis; PHC = primary healthcare; NHIRDS = National Health Information Repository and Data System.

sector clinic was included as a point of reference in the ranking under each theme.

The study was approved by the Human Research Ethics Committee of the University of the Witwatersrand (ref. no. M171082) and the Institutional Review Board of the Boston University Medical Centre (ref. no. H-37230). The dataset generated and/or analysed during the study is not publicly available because it contains information that could compromise research participants' privacy/consent, but it is available from the corresponding author (SG) on reasonable request.

Results

Overview of organisations and service models

Of the 11 organisations identified, 8 agreed to participate and provide key informant interviews and 1 declined to participate. The other 2 organisations were contacted a minimum of five times (telephonically and by email) over a period of 6 months. At this point they were considered non-responsive and were excluded from the study.

The 8 different PHC service delivery models are summarised in Table 2. The organisations interviewed included one nurse-led franchise model, one clinical associate-led model, one community practice, one single-GP practice and one GP practice network, one contracted-out GP model, and two NGO-run clinic models, one in urban and semi-urban Gauteng Province and one in rural Limpopo Province. Common to all models was providing affordable access to private PHC services, primarily servicing the low-income, employed but uninsured population with facilities either conveniently located in under-served areas (e.g. informal settlements or rural farming areas) or with features facilitating easy access to under-served populations (by locating in commuter areas or close to places of work, or lowering the barriers to access with more flexible working hours and shorter waiting times). Funding models differed across the organisations, as did the extent of reliance on any one source of funding, be it government, private, donor or user fees. The package of PHC services across the models was determined by the scope of practice of the staff as well as the organisation's funding source and focus, but all models provided treatment for diabetes and hypertension, with HIV and TB treatment being largely restricted to those models (n=4/8) that were able to access medicines at state sector contract prices through an agreement with government. None of the organisations was entirely reliant on donor funding; many relied on user fees and patient volumes in order to be or become sustainable (n=4/8), and all but 2 had plans to expand their geographical footprint.

Spectrum of service model characteristics

Based on the respondents' replies and additional information shared by the organisations after the interviews, we summarised the service delivery models relative to one another along a spectrum regarding each key aspect (Fig. 1). A typical government PHC clinic is included as the reference case.

Table 2. Overview of organisations and service models*

	Urban NGO clinic	Rural NGO clinic	Nurse led	Clinical associate led	Contracted-out GP	GP practice network	Community practice	GP practice
Summary	A comprehensive PHC clinic in urban Johannesburg	A PHC clinic in rural Limpopo offering education and treatment services to workers in the agricultural, nature conservation and tourism sectors	Provides nurse-led PHC services at an affordable price to under-served communities in SA	Private PHC clinics run by clinical associates providing equitable access to affordable healthcare	A network of private GP practices (and pharmacies) initiating and managing ART patients in a Gauteng district who do not access the public sector	Network of private medical centres providing accessible and affordable quality GP-led PHC services to low-income, employed market	A community-orientated PHC model led by family doctors in an urban township in Johannesburg	A GP-led private practice providing convenient access to affordable, quality PHC services
Model	Comprehensive PHC services provided by nurses and doctors. Largely integrated into the DoH.	Fixed-site clinic model, with outreach clinics to game lodges and farms. Trains farm workers to provide health education and health promotion services on site.	Nurse-led ownership model. Clinics are owned and operated by a professional nurse and organised as an NPC, and follow a franchise model with a network fee.	A retail-style employed clinic model. Clinics operated by clinical associates and health coaches, but with technology-enabled doctor oversight. Health coaches formed the foundation of the model and established relationships with patients to drive positive health behaviour and prevention.	A partnership between GPs, DoH and the private administrator. Private GPs are organised into an HIV disease management network and paid a capitated annual fee at the point of enrolling uninsured, treatment-naive patients who are not reached by the public sector.	GP-led PHC medical practices.	A community-orientated PHC model led by family doctors employing active population health management using a team of CHWs. Integrated into the DoH.	Aims to address barriers to access by providing convenient access to affordable high-quality PHC services to workers, migrants, commuters and residents.
Organisation start date	1963	Started in 2005 and registered as an NGO in 2006. Signed an MOU with DoH in 2010 for support with HIV medicines and labs, as well as staffing.	Piloted with 6 clinics in 2012. Started scaling up in 2014.	Launched in 2015 but closed in 2016 owing to funding challenges.	Pilot started May 2018.	Started first practice in 2004. Next two medical centres opened in 2015 and 2017.	Started in 2014.	In 2015, bought an existing donor funded clinic and rebranded it.

Continued ...

Table 2. (continued) Overview of organisations and service models*

	Urban NGO clinic	Rural NGO clinic	Nurse led	Clinical associate led	Contracted-out GP	GP practice network	Community practice	GP practice
Package of services	Comprehensive PHC services, including chronic disease management and a specialist HIV clinic and TB department. Also offers services encompassing the sociodeterminants of health. Obtains medicines and labs from DoH/NHLS.	General PHC services, HIV and TB treatment, chronic disease management, and women's health (cervical cancer screening and early treatment), as well as specific programmes (e.g. sex-worker projects).	Includes all PHC services that fall within the scope of practice of a professional nurse with a dispensing licence (up to Schedule 4). Procures medicines and vaccines at SEP and labs privately.	Included all PHC services that fall within the scope of practice of a clinical associate. Holistic offering of PHC services (including oral and eye health). Procured medicines at SEP and labs privately.	HIV testing and treatment services, as well as TB comorbidities. Ultimately wishes to extend into chronic conditions (that are common comorbidities for HIV patients), but current funding is HIV-focused.	Offers PHC services through medical centres as well as occupational health services to employers. Procures medicines at SEP and labs privately.	Offers comprehensive PHC services – refers to the adjacent CHC for TB testing and treatment. Obtains medicines and labs from DoH/NHLS.	Offers comprehensive PHC services. Treats HIV but refers TB treatment to public sector. Books patients for visiting gynaecologist, dermatologist and psychologist. Procures medicines and labs privately.
Target population	The majority of beneficiaries are from surrounding informal settlements. A large proportion are foreign migrants. Most are employed but low income.	Targeting employed farm workers (permanent and seasonal) and lodge employees. All uninsured.	Under-served communities. Employed (80%), unemployed (20%), i.e. elderly grant earners, but all low-income and uninsured (LSM 1 - 4). Primarily targeting people seeking privacy, working mothers needing to vaccinate their children and STI treatment.	100% employed, and a small proportion insured who utilised this clinic when medical savings ran out. Targeted blue-collar workers at one clinic and commuters at the other.	Employed, low-income ('the working poor') in and around a Gauteng district. Aim is to target uninsured people living with HIV currently missed by the public sector owing to access barriers and who are cash-paying customers in the private sector.	Originally aimed to target the uninsured but employed (both formal and informal) market who pay out of pocket for private PHC services. However, the current model is also targeting the insured market – ~45% of patients are insured. Set up in locations to target commuters, township residents, mine workers.	Majority of beneficiaries are from one ward in the surrounding township and are representative of this ward: 40% are unemployed, none insured, and ~⅓ are receiving government grants.	Targeting the employed seeking convenience. Majority employed, 30% insured, LSM 3 - 6. 50% of patients are migrants (both internal and external to SA). Located in high-density area, catering for workers, residents and commuters.
Financial model	Combination of private, donor and DoH (provides essential medicines, NHLS), as well as user fees to a small extent.	DoH, and a combination of private donors, grants, income-generating projects and some limited user fees (breast and cervical cancer screening, and acute services at one clinic). Future sustainability requires the expansion of a user fee model.	User fees cover operational costs. Upfront infrastructure funding and working capital donations (for first 2 years) provided by donors and National Treasury (Jobs Fund). Nurse requires 250 patients per month to break even.	User fees and equity/debt for upfront capital. Required 16 patients per day to be sustainable.	A donor funds the annual GP consult fee, dispensing fee and admin fee. DoH funds medicines, labs and test kits.	User fees and private financing. Requires 500 - 800 patients per month per clinic to be sustainable.	95% funded by DoH (medicines, labs, consumables and staff). Remaining 5% from private/corporate grants.	User fees and private financing. Requires 850 patients per month to be sustainable.

Continued ...

Table 2. (continued) Overview of organisations and service models*

	Urban NGO clinic	Rural NGO clinic	Nurse led	Clinical associate led	Contracted-out GP	GP practice network	Community practice	GP practice
Volume and scalability	1 facility (and 1 mobile). Serves ~6 000 patients each month.	3 fixed sites, 8 outreach clinics. Serves 2 000 - 3 000 patients per month across all clinics.	Currently has 41 sites but plans to expand to 70 by 2019. Each clinic serves on average 400 patients per month.	2 clinics in Johannesburg (1 in the CBD and 1 in an industrial area). Planned to scale up with the use of telehealth.	6 GPs currently contracted in one district, but plans to expand nationally.	3 medical centres around Johannesburg. Would like to expand to have a national footprint.	1 facility servicing one ward. Serves ~1 200 patients per month but looks after a population of 18 000. Aims to expand to other wards.	Currently only 1 clinic, serving ~700 patients per month. Initially planned to set up 5 clinics.

NGO = non-governmental organisation; GP = general practitioner; PHC = primary healthcare; SA = South Africa; ART = antiretroviral therapy; DoH = Department of Health; NPC = non-profit company; CHW = community health worker; MOU = memorandum of understanding; labs = laboratory services; TB = tuberculosis; SEP = single-exit price; LSM = living standards measure; CHC = community health centre; NHLS = National Laboratory Health Service; STI = sexually transmitted infection; CBD = central business district.
*Each organisation is briefly summarised according to the theme listed in the first column: model, start date, package of services, target population, financial model, and volume and scalability.

From this summary, several trends emerge.

What populations do the organisations target?

All organisations required a robust strategy for balancing their goal of targeting populations with very low paying capacity and no or limited health insurance with the need to either cover costs or generate profit (in the case of for-profit organisations). While some models targeted the low-income uninsured who are also currently cash-paying customers in the private sector, the nurse-led model targeted those for whom a private GP was outside their affordability range, and both the rural and urban NGO models targeted the working poor who would not normally be cash-paying patients in the private sector. At least one model had to compromise on their initial intention of not serving the insured market, as they required additional demand among the insured to subsidise the non-insured market to ensure sustainability. However, this model did use GPs as their main healthcare providers, which is costlier. At least three models (n=3/8) targeted cross-border migrants (non-SA nationals), as well as migrant labour (within SA) who struggle to access care during regular hours.

What sources of funding do these organisations use?

Most organisations had more than one source of funding, with different funds contributing in varying degrees to their overall budget. Half the organisations (n=4/8) funded their capital or start-up costs privately or through commercial finance, while the other half used donor financing. Only 3 of 8 models were fully commercial models relying entirely on user fees to cover the operating costs, while a fourth was assisted with working capital donations for the first couple of years but thereafter was fully commercial. The other 4 organisations relied on a combination of donor and government support to cover operating costs, mostly in the form of access to public sector laboratory tests and medicines. The more dependent an organisation was on user fees and commercial/private funding for capital and start-up costs as their primary form of funding, the more dependent they appeared to be on both patient volumes at any one site and the scale of operations, i.e. the number of sites, to be sustainable.

What PHC services do the organisations offer and what factors influence the scope of services?

To a large extent, the funding source dictated the range of services that organisations were able to offer. Since many organisations are volume-driven models, minor ailments, chronic disease management and testing and screening for HIV, TB and other diseases was an area many focused on, as patient volumes tend to be high, demand is more consistent than for other diseases, and the need for staff specialisation is limited.

However, this excluded the more specialised chronic infectious disease treatment for many: all the purely private models (n=4/8) referred patients needing TB treatment to the public sector (including the government-funded community practice), and the provision of antiretroviral therapy was primarily limited to models that had access to public sector medicine stock (n=4/8) owing to the prohibitive cost of HIV drugs in the private sector (ZAR496 per patient-month at the government-regulated private sector single-exit price (SEP), compared with ZAR117 per month for the most used fixed-dose combination for first-line adult treatment).[6,7] Three organisations without access to government stock did offer HIV treatment services, but their patients were required to purchase antiretroviral (ARV) medicines at SEP, thereby restricting access due to affordability; for example, the nurse-led model had just under 40 HIV treatment patient visits on average per month, while their model served ~16 000 patient visits a month. In contrast, two organisations estimated that the average cost of medicine per consultation was between ZAR30 and ZAR60 only, once HIV and TB treatment were excluded.

What strategies do organisations employ to increase technical efficiency and decrease costs in order to provide care that is affordable to their target population?

- **Task shifting.** All models used or had the option of using healthcare workers of a lower cadre when appropriate, e.g. replacing doctors with nurses or clinical

Public sector clinic	Community practice	Nurse-led franchise	Clinical associate led	GP practice network	GP practice	Contracted-out GP	Rural NGO clinic	Urban NGO clinic

FINANCIAL MODEL		LEAST → MOST								
	Degree of independence of grant, donor and/or government funding									
	Description of sources of funding	DoH	DoH, grants	DoH, donors, grant, private	Primarily funded by one donor (60%), DoH (30%) and other donors, user fees	Corporate, donor, DoH	Donors, corporates, grants and National Treasury, user fees, network fees	User fees and private funding (equity/debt)	User fees cover operations and commercial/ private funding cover setup	User fees and private funding
	Operational costs of PHC provider	100% DoH	DoH (95%), private grants (5%)	DoH (60%) and other donors (40%)	60% donor, DoH 30%, user fees (5 - 8%), other donors	Donor funds the annual capitated GP consult fee, the dispensing fee, warehousing and distribution costs, and the admin fee per patient/ month (for use of IT systems), and the DoH pays for medicines, labs and test kits	100% user fees (except for the first 2 years where the nurses get an operational cashflow donation)	100% user fees	100% user fees	100% user fees
	Upfront infrastructure/ start-up costs/ capital investment	DoH	DoH (premises), donors (renovation of premises)	Donors	Donors	Private funding (for GP practice), corporate funding of IT system	Donors	Commercial/ private funding	Commercial/ private funding	Commercial/ private funding
	Volume dependence of business model									
		Not volume dependent	Not volume dependent	Not volume dependent	Not volume dependent	Not established what a sustainable number of patients for the GP would be, though scale would be important. Scale is important to the administrator for the admin fee – the model becomes more affordable the more patients served.	Volume-driven model for both nurse and NPC: nurse requires 250 patients per month to break even, NPC requires 50 clinics to be self-sustainable.	Volume-driven model: required 450 patients per month to break even (assuming 2 consulting rooms).	Volume-driven model: requires 500 patients per month at 2 of the sites to break even, requires 800 at the 3rd site to break even.	Volume-driven model: requires 850 patients per month to break even.
	User fee amount for an average consultation									
		ZAR0	ZAR0	ZAR0	ZAR0 - 35	ZAR110	ZAR150	ZAR200	ZAR300	ZAR350
		All services free at point of delivery	All services free at point of delivery	The annual capitation for the GP consultation is paid by the donor.	Free at point of delivery, except at one of the outreach on-site clinics that charges ZAR70 for a consultation with a nurse and basic medicines split 50/50 with the employer.	This visit fee is valid for a month and is termed an 'admin' fee. It includes consultation and all labs and medicines.	Included consultation with clinical associate and medicines from EML (in 2016 prices).	PHC consultation with nurse and medicines.	Includes consultation with a GP and medicines from EML.	Includes consultation with GP (includes some basic medicines).

PHC SERVICES												
	Scope of screening, testing and treatment services with regard to the four conditions of interest (HIV, TB, diabetes, hypertension)*											
	5/11	9/11		10/11		10/11		11/11		11/11		11/11
	Full scope of PHC services†											
	2/8	5/8		6/8		8/8		8/8		8/8		8/8
	Government in-kind contributions											
	None	None		None		HIV and TB medication, labs at NHLS and HIV test kits		Labs at NHLS, HIV-related and malaria medicines and consumables, nursing staff		Medicines, labs at NHLS and some staff		All
Notes		Has tried to explore opportunities with both municipal and provincial government for chronic disease management, EPI, HIV treatment, TB treatment, oncology screening and CCMDD collection point.		Applied to be a 'designated organisation' in order to facilitate collaboration with the DoH – application not approved.		Tried to set up a contract with the DoH and district to provide DoH medicines and labs through NHLS – agreement fell through.		Restricted to HIV and TB, intention is to expand into other chronic diseases.		DoH funding has recently been discontinued for staff.		
STAFFING	Patient visits/clinical staff per month											
		90		111		112		120		125 - 133		157		200		250
	No data	Serves ~360 patients per month. Has one doctor, 1 professional nurse, and 2 lay counsellors.		Serves ~1 000 patients per month. Has 1 family physician, 1 doctor, 1 clinical associate, 1 enrolled nurse, 5 CHWs (excludes the 15 CHWs working in the community).		1 clinical associate and 2 health coaches, and a doctor available via technology. Used the desired number of patients of 16 per day to determine average per month (open 7 days a week).		Serves ~6 000 patients per month (at the site and the mobile). This decreased after a HIV decanting strategy. ~50 clinical staff.		Used between 8 and 15 clinical staff (from the normative guides human resources for PHC clinics) and serves 50 - 100 patients per day or 1 000 - 2 000 a month.		Serves ~2 300 patients across all clinics (including the outreach clinics) per month with 15 clinical staff.		At least a professional nurse and nurse assistant, each clinic sees on average 400 patients per month.		1 GP and 1 clinical associate per 500 patients (used most established site as an example).
	Highest healthcare worker cadre available on average visit															
	Nurse	Nurse (doctor on site on some days)		Nurse (doctor on site on some days)		Nurse (but will be referred to doctor on site if necessary)		Clinical associate (telemedicine access to a doctor)		GP (however, the model is flexible and staff mix is at the discretion of the GP)		GP (sometimes a clinical associate)		GP (sometimes also clinical associates)		GP

TARGET POPULATION	Socioeconomic status of target population profile (insurance and employment status)							
	All (including indigent population).	All. Serves entire population of a ward with an unemployment rate of 40% and with a third of the population receiving government grants.	Targeting employed farm workers (permanent and seasonal) and lodge employees. All uninsured. Vulnerable rural populations.	Low-income employed/ unmployed. Uninsured. Urban.	Employed (80% employed, 20% unemployed i.e. elderly grant earners), but uninsured. LSM 1 - 4. Concurrently using both public and private, but private GPs outside affordability range.	Employed, low-income. Uninsured but cash-paying customers in the private sector.	100% employed, and a small proportion insured – and utilised the organisation when medical savings run out.	Majority employed. LSM 3 - 6. 50% migrants and ~30% insured.	Employed (both formally and informally). 45% insured.
PATIENT PULL FACTORS	**Flexibility of access: opening hours, waiting time, location**								
	Open weekdays, 07h30 - 16h00.	07h30 - 16h00 Monday to Friday. Seldom turns patients away. Close to places of work.	Open 08h00 - 16h00 Monday to Friday. Has an appointment booking system that accounts for ~50% of all visits. Located in the ward that it serves.	Open 07h00 - 16h00 Monday to Friday. Clinics are conveniently located close to or on working premises (farms and game lodges).	Open Monday - Friday at GP office hours and on Saturdays (dependent on the GP). Close to shopping malls, transport routes, and communities in need.	Open 09h00 - 17h00 Monday to Friday and 09h00 - 14h00 on Saturdays, but nurses cannot turn patients away and clinics are often open after hours. Stipulated 15 - 20-minute consultation duration. Average waiting time is 1 hour. Located in the community.	Open 08h00 - 16h00 Monday to Friday. 08h00 - 13h00 on Saturday. But flexible working hours dependent on when patients request an appointment (which can be outside normal operating hours). Located in centre of city, close to taxi ranks, shops and residential.	At two sites, open 09h00 - 17h00 and 09h00 - 18h00 during the week, and 09h00 - 14h00 on Saturdays. At the flagship site, open 07h00 - 19h00 during the week and 08h00 - 17h00 on Saturdays. Located in a commuter corridor, townships and near taxi ranks.	07h00 - 19h00 Monday to Friday, 08h00 - 17h00 on Saturday and 09h00 - 15h00 on Sunday. Waiting time on average 10 - 15 minutes. Had a booking appointment system but uptake was not good. Located in an industrial area and on commuter routes.

OTHER	Sophistication of patient management system								
	No electronic record system. Data are reported into the DHIS and HIV patients have paper files with data captured on Tier.Net. All other patients are recorded in a patient register.	Information reported into DHIS. Paper-based filing system. HIV and TB patients captured into Tier.Net. HPRS being rolled out for patient registration information.	Data reported into DHIS and Tier.Net. Have individual patient paper-based files organised by family.	No electronic record system. Data are reported into the DHIS and HIV and TB patients are captured on Tier. Net. Comprehensive paper-based files for all patients, which are captured into Excel. Syscare used for patient admissions and Propharm used for pharmacy.	Uses Mediswitch for claims as well as patient management. There are no prompts in the system, but resource utilisation is recorded and lab and radiology results are inputted manually. Also keeps paper files.	Used an Electronic Health System developed off the foundation of a US-based system. Doctor had real-time access to the patient management system. A clinical governance module was developed to monitor clinical associates. There were no prompts or algorithms.	Uses Healthbridge software to capture patient information. While this captures demographics, clinical information (free text and diagnosis with ICD-10 codes), it is primarily a practice management system for billing.	Uses a patient management system, HealthIQ2, that is nurse-friendly and built for nurses. It has intelligence and nurse-driven treatment algorithms built in. It also has telemedicine functionality whereby a doctor can review photos of clinical cases. The functionality can be extended to the patient's phone via an app.	Has linked patient care plans to ensure adherence to guidelines and can generate cross-cutting reports. It provides standardised reporting and data extracts for import in DHIS (and Tier.net).
	Number of sites								
	1 site	1 site (potentially to expand to another 4 wards)	1 (and 1 mobile)	2 (was in the process of opening 2 additional sites)	3 sites	3 fixed sites, 8 outreach clinics	Has 6 pilot GP sites, but plans to expand significantly	50 (plans to have 70 by end 2019)	3 465

Fig. 1. Spectrum of service model characteristics. A summary of the service delivery models ranked relative to one another along a spectrum regarding each key theme: financial model, PHC services, staffing, target population, patient pull factors and other. Organisations listed to the left had the least of a particular characteristic and organisations towards the right had the most of a particular characteristic. A typical government PHC clinic is used as the reference case. The colours refer to the type of organisations (see key at top of figure). (GP = general practitioner; NGO = non-governmental organisation; DoH = Department of Health; PHC = primary healthcare; GP = general practitioner; IT = information technology; labs = laboratory services; NPC = non-profit company; EML = Essential Medicines List; NHLS = National Laboratory Health Service; EPI = Expanded programme on Immunisation; CCMDD = Centralised Chronic Medicines Dispensing and Distribution; CHW = community health worker; LSM = living standards measure; DHIS = District Health Information System; HPRS = Health Patient Registration System; ICD-10 = 10th revision of the International Statistical Classification of Diseases and Related Health Problems.)

*Scores were assigned to determine which organisations provided the smallest number of core services (out of a total of 11 possible services - HIV testing, HIV treatment, and screening, testing and treatment for TB, diabetes and hypertension), and which provided the most of these services.

†Organisations were assigned a score based on whether or not they provided any service in each of the 8 PHC care categories: maternal health (any antenatal/postnatal care); child health (any immunisations); sexual and reproductive health (family planning, screening and treatment of sexually transmitted infections, cervical cancer screening); communicable and non-communicable diseases (screening and testing; treatment, care and support); acute care (minor ailments).

associates, and even in some cases using health promoters, community health workers or health coaches in place of nurses.
- **Access to public sector medicine and laboratory tests.** Some models (*n*=4/8) have actively pursued and entered into partnerships with government to access medicines such as ARVs at government prices. In these same models, the National Health Laboratory Service (NHLS) provides laboratory testing services for some or all tests at no cost to the organisation.
- **Scale/volume.** Some models (*n*=4/8) sought economies of scale by encouraging increased volumes per site in order to reduce the shared overhead cost of their operations per patient, as well as in specific cases increasing the number of sites in order to reduce the fixed above-facility cost (e.g. organisational management costs). One respondent from the GP practice model claimed that 'PHC is a game of numbers' and that the 'few who have made it have made it because of numbers and because of the location they are in'. One model used a loyalty card system (10th visit free) to encourage return visits, others were located in high-throughput commuter corridors (*n*=7/8), while another used direct marketing (*n*=1/8). All organisations expressed a willingness to contract with the NHI Fund, with NHI seen as a mechanism, *inter alia*, to reach scale.
- **Use of technology.** Most models used electronic patient management systems (*n*=6/8), often augmented with an electronic health record (*n*=5/8), to make record keeping more efficient and provide (sometimes real-time) guidance for lower-level staff through automated clinical algorithms providing prompts. Telemedicine was also employed in two models to provide real-time access to a remote medical doctor for medical oversight and guidance by lower-cadre healthcare staff.

What strategies do organisations use to improve accountability and quality of care?
- **Ownership models.** Some organisations used franchise or ownership models instead of salaried employment models. As a result, providers such as nurses who work to own their clinic and receive the profits are motivated to not only see as many patients as possible, but also to provide good quality of care in order to make sure customers return. Two organisations mentioned the importance of hiring staff with the right culture and vision.
- **Electronic patient clinical management systems.** Two (*n*=2/8) organisations have invested in their own patient management system with prompts to the healthcare worker, or built-in care plans. For example, the contracted-out GP model used a patient care plan in order to standardise care across all GPs in the network.
- **Flexibility of access.** Flexibility of access for patients was enhanced in terms of location (close to home, work and situated in commuter areas), operating hours (including weekends) and short waiting times. A number of models used or explored appointment booking systems (*n*=5/8), and at least two models mentioned the importance to their patients of privacy provided by a private clinic v. a public sector clinic (especially in terms of HIV treatment and treatment of sexually transmitted infections). These factors relating to ease and convenience of access are likely to increase patient satisfaction. One respondent commented that access is not just about the availability of services, it is also about convenience and the perception of quality.
- **Comprehensive services.** Some models offered auxiliary services such as dentistry and optometry in the same premises; others employed health promoters or health coaches in addition to the clinical staff. One model engaged in active population health management, deploying community health workers in the community to identify health issues. Additional services utilise common resources and the diversity of services available attracts more patients.

Discussion

We identified and described a number of private providers in SA who have established innovative models of PHC delivery that aim to provide access to good-quality PHC services at affordable rates. All models serve a population that seeks to access care outside the public sector despite not being privately insured, and is generally willing to pay for this care despite the same services being provided for free in the public sector.

We have explored these different models within the context of SA's transition to universal health coverage. As a system transitions towards universal health coverage, private providers could play a role in providing publicly funded services and encourage a public-private mix that ensures that the needs of the population are met.[8] Contracting of private PHC providers or, more specifically, strategic purchasing of private PHC services are features of universal health systems in high- and middle-income countries. For example, primary care is largely delivered through contracted private GPs in the UK,[9] and in Thailand, private PHC clinics are contracted to provide PHC services.[10-12]

NHI in SA is premised on the establishment of contracting units for PHC in each district, who identify the public and private facilities that the NHI Fund will contract with provided that they are accredited (according to the criteria listed at the beginning of this article) by the NHI Fund. This study did not seek to identify the organisations that government could contract with under NHI, or the specific form that this contracting might take. To do so, a more representative sample of GPs across all practice types (single-GP practices, group GP practices or multidisciplinary teams) would be necessary, as all of these will form the foundation of private PHC contracting under NHI. The under-representation of GPs and the small sample size, are limitations of this study, but the perspectives of GPs on NHI contracting, as well as different contracting options, are well documented elsewhere.[13-17] However, what was clear was that while all other models (excluding the nurse-led model) either had a GP on site or could provide access to a GP on certain days or via telemedicine, task shifting to lower cadres of healthcare workers was an important cost-containment strategy. The current SA PHC model is based on nurse-run and led care through multidisciplinary teams in PHC clinics where access to a doctor is normally through referral. Nurse clinicians may be new for the private sector, but not for the public sector. Keeping the model flexible and the staff mix at the discretion of the GP or healthcare practitioner could allow for innovative practice types at lower cost and potentially higher quality.

The NHI Fund is also tasked with applying the principles of value-based purchasing by ensuring that the contracted service providers provide the services at 'the lowest possible price without compromising the quality of its services'.[5] Most of the low-cost private PHC service providers we reviewed have actively engaged strategies aiming to ensure the provision of affordable quality care. Within these strategies, scale is an important pivot towards achieving lower unit costs and spreading fixed costs across more paying patients, as well as access to government medicines and laboratory tests.

We found that the more reliant the organisation is on user fees and/or commercial and other private funding for capital and start-up costs, the more important scale and volume are to their model. This

is because organisations are limited in their ability to raise the prices of their services owing to the low paying capacity of their patients, whose demand is likely to be quite elastic given the competitive constraint posed by free public sector services and generally low incomes. Instead, these organisations need to attract sufficient volumes. There seems to be an impression on the part of many organisations that a national or larger footprint, or establishing a network of providers, will facilitate contracting with the NHI Fund – perhaps because higher patient volumes, up to a point, are required to ensure that the NHI capitation rate will make commercial sense (not dissimilar to the low price points of current user fees), and a larger network would reduce overall contractual or above-facility costs.

Furthermore, given that margins are tight and lowering prices to attract additional patient volumes is often not a sustainable option, these organisations rather need to compete on aspects of quality in order to attract sufficient volumes. This manifests itself in a greater focus on increasing patient satisfaction with the quality of the service, as well as other structural features (strategic site selection, friendly and welcoming staff, clean and inviting facilities, etc.) and also branding and marketing. We have, however, not attempted to determine whether there is a quality differential between the models or relative to the public sector model. We have also not tried to evaluate the difference in a salaried or ownership model's impact on staff incentives and motivation, and the subsequent quality of care delivered.

Another key observation from the exploratory analysis was that all the organisations interact to differing degrees with the NDoH, and this affects the patient volumes they can afford to serve as well as what services they can offer. For example, we found that only organisations that receive medicines from government stock are able to offer the relatively more costly and specialised HIV and TB treatment services to any significant extent. Organisations are primarily responding to the needs of their clientele as well as financial constraints. Access to medicines at state prices could feasibly allow some of the organisations to expand their service offering. In future, should they be required to offer a more comprehensive service under NHI, it seems likely that these organisations would be able to meet these requirements without considerable difficulty (for example, if necessary, by contracting out the additional services). Furthermore, a number of organisations mentioned approaching the public sector with proposals regarding, for example, vaccination service delivery at government stock prices in order to enhance the government vaccination programme, or facilitating access to cancer screening for public sector patients at reduced rates. Little traction had been gained, according to these organisations, possibly owing to the challenges that both the public decision-makers and these private organisations face in operating in a regulatory grey area at the point at which the public and private sectors intersect, in particular during the transition period to NHI. The exception to this was the contracted-out GP model that had successfully negotiated a service-level agreement with a provincial department of health for HIV and TB testing and treatment services, but was hoping to expand its package of services once proof of concept and trust had been established.

Government, in particular the NDoH, could enable innovation and encourage the development of more of these models by defining a regulatory framework and setting out the required processes for mutually beneficial interaction between the two sectors, as mentioned by the former Minister of Health in his Budget speech: 'Making sure that some of our programmes are undertaken by the private sector will contribute heavily in lessening our burden. For instance, we shall decant 50 000 patients to 250 private GPs for ARV treatment between October 2018 and December 2020, and build up from there. The State will supply the ARVs and pay for the laboratories. The GPs will be paid their service fees.'[18] However, without a clear policy framework for collaboration in the transition phase to NHI, it is difficult for the private sector to interact effectively with the government and provide services to their target population (insured, employed low income). The recent Health Market Inquiry recommended that 'strategic purchasing of available private capacity to supplement capacity in the public sector need not wait for the NHI. Government could, and should, already contract with the private sector where it needs capacity.'[19]

Conclusions

We have provided an exploratory analysis of private PHC service delivery models serving the low-income, uninsured patient population, establishing factors that increase the efficiency of such service delivery and delineating combinations of strategies that could make these models successful both during the transition to NHI and during full-scale NHI implementation. A clear regulatory framework would act as a catalyst for further innovation and facilitate contracting. These existing models can enhance and complement government provision and could be scaled up to meet the needs of expanding PHC under NHI. Whether these models might be able to effectively provide care to their target population at a cost that is less than the public sector and with better outcomes, is the focus of further research. Understanding these models and the space and the parameters in which they operate is important.

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