



STRENGTHENING
PHC SERVICES
IN THE NORTH-WEST PROVINCE

STAFFING SCENARIOS
INCREASED SUPPLIES
CHANGED OPENING HOURS

Emmanuelle Daviaud
Health Economist

South African Medical Research Council

For
Albertina Sisulu Centre for Global Health and Research
The Walter Sisulu University

23 November 2015

Acknowledgements

We want to acknowledge the co-operation of the North-West Department of Health, in particular Jannie DeBeer, chief director of Corporate Services and district managers for providing data.

We also want to acknowledge Itumeleng Funani and Hardie Fourie for the discussions on possible scenarios, and Sikhumbuzo Mabunda, Natasha Williams and Yanga Mcedane from Albertina Sisulu Centre for Global Health and Research at the Walter Sisulu University, for their help in collecting and entering information.

TABLE OF CONTENT

TABLE OF CONTENT	2
TABLE OF FIGURES	4
SUMMARY	5
BACKGROUND	10
METHODOLOGY	11
WBOTs:.....	12
Clinics and CHCs	12
Changed Opening Hours	16
Costing	17
RESULTS	18
Current Situation.....	18
Current and Modelled WBOTs.....	19
Scenario 1: Policy	20
Scenario 2: MRC scenario with current opening hours	21
Scenario 3: Optimised Scenario with modified hours	22
Non-staff costs	24
Comparing Scenarios	24
Impact of shift from hospitals to PHC and CCMDD	27
Discussion.....	28
Recommendations	29
References	30

TABLE OF FIGURES

Table 1.	WBOT Team Composition	12
Table 2.	WISN Norms for Clinics and CHCs	13
Table 3.	Skill Mix for Clinical work in MRC Scenario	15
Table 4.	Minimum staff requirement MRC scenarios.....	16
Table 5.	Workload and Opening Hours.....	17
Table 6.	Mid-Point Salaries Package	17
Table 7.	Current FTEs and staff cost	18
Table 8.	Current and Modelled WBOT teams.....	19
Table 9.	Scenario 1 Policy, Target FTEs and Staffing Cost	20
Table 10.	Scenario 2: MRC scenario with current opening hours – staffing and costs	21
Table 11.	Scenario 3: Optimised scenario with modified opening hours: staffing and costs.....	23
Table 12.	Comparison of Current staff and costs with the 3 scenarios.....	25
Table 13.	Cost per headcount in CHCs, clinics and mobiles	26
Table 14.	Possible Savings	27

SUMMARY

Primary Health Care (PHC) has been widely documented to play a central role in the health status of a population. Research has also shown it to be the most cost-effective manner to improving a population's health status. From this perspective, strengthening PHC is a pivotal approach to public health care in South Africa. In addition a strengthened PHC platform would decrease unnecessary visits to hospitals as well as hospitalisation.

Access to PHC is largely dependent on community-based services, the location of facilities and their opening hours. **Quality** is a function of the availability of skilled staff as well as the availability of drugs, labs tests and other consumables. **Efficiency** on the other hand relates to the optimum utilisation of resources, such as, HR (skill mix), Finances as well as Facility Opening Hours.

As part of the North-West province's Health Systems Strengthening initiative, in collaboration with the Albertina Sisulu Centre for Global Health and Research (ASCGHR) of the Walter Sisulu University, the North-West Department of Health (NWDOH) needs to assess the resource implications of strengthening the PHC platform.

Current staff composition, staff costs and non- staff costs were analysed for Ward Based Outreach Teams (WBOTs), Mobile Clinics, Clinics and Clinical Health Centres (CHCs) and several scenarios were modelled.

- Scenario 1: Policy Scenario, applying the Workload Indicators for Staffing Need (WISN) norms suggested by the National Department of Health to Current Clinics and CHCs opening hours. As the WISN norms only cover clinics and CHCs/Midwives Obstetric Units (MOUs), for the purpose of comparison with the current situation and other scenarios, target staffing for WBOTs and mobiles as calculated in scenario 2 have been added to calculate total target Full-Time Equivalents (FTEs) and differences in cost with the current situation.
- Scenario 2: MRC Scenario with current Clinics and CHCs opening hours. This scenario is based on norms defined by the South-African Medical Research Council (MRC) for the National Department of Health (NDoH) at the time of discussions on PHC Re-engineering, and these have been further updated.
- Scenario 3: Optimised MRC Scenario with changed Clinics opening hours and current CHCs hours. Based on the same norms as Scenario 2, this scenario applies changed opening hours to clinics based on their level of utilisation. As a consequence some facilities have their opening hours reduced, whilst some have theirs increased and medium size clinics have their hours extended to 44 hours a week to include opening on Saturday mornings to increase access.

A Mid-point salary assumption was applied to the modelled staffing composition of each scenario and a stipend level of R3000 per Community Health Worker (CHW) (+10% Non-Profit Organisations (NPO) fee) was assumed due to the lack of uniformity in CHW stipend.

The staff modelling and costing are limited to the core staff that represents the large majority of staff and expenditure at PHC level namely: doctors, Public Health Care Nurses (PHCNs), Professional Nurses (PN), Enrolled Nurses, Nursing Assistant, Counsellor, Pharmacy Assistants and Receptionists/Data capturers.

Whilst no national policy has been finalised, WBOTs were modelled using the norms under discussion at the NDoH. **For WBOTs the following should be highlighted:** To ensure optimum

working of the teams, 527 dedicated team leaders, Enrolled Nurses, are required as well as a total of 7 257 CHWs/Home Based Carers (HBCs) which is an additional 973 compared to the current situation. The modelled cost of WBOTs amounts to R410 million, representing an additional R161 million compared to the current situation.

The number of FTEs varies significantly between scenarios, with large implications for staff costs.

	CURRENT AND TARGET FTES											
	Middle Manager	Operational Manager	Dr	Medical Associate*	PHCN/Advanced Midwife	PN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor*	CHW	Pharmacist Assistant Post-Basic	Admin + Data Capturer
Current			45		305	962	647	330	738	6 284	56	724
Scen. 1: Policy/WISN	46	138	144	368	625	2 580	4 075	85	554	7 257	457	1 679
Scen. 2: MRC current hours			302		876	872	527	1 177	547	7 257	467	901
Scen. 3: Optimised -MRC changed hours			299		720	901	527	1 109	635	7 257	480	811

Current: The combined FTEs for WBOTs, Mobiles, Clinics and CHCs amount to a cost of R1.15 billion. For CHCs, clinics and mobiles this amounts to about R910 million and R249 million for WBOTs.

Scenario 1: Policy/ WISN. The cost of target staffing for clinics and CHCs, based on the WISN norms, would amount to R3 billion, the other components as calculated in the other scenarios amount to R45 million for mobiles and R410 million for WBOTs which gives a total of just under R3.5 billion for all the components combined.

Scenario 2: MRC Scenario with current opening hours. The cost of target staff for clinics and CHCs amounts to R1.5 billion, for mobiles it amounts to R45 million and for WBOTs it is R410 millions, a combined total of R1.9 billion. This implies an additional R772 million to the current situation.

Scenario 3: Optimised Scenario with modified hours. The cost of target staffing for the optimised scenario would amount to R1.8 billion, an additional R681 million compared to the current expenditure.

Non-Staff Costs: With financial constraints, non-staff expenditure tends to be cut with a resulting shortage of drugs, laboratory tests or transport, pushing patients to attend hospital Out Patient Departments (OPDs). The objective is to increase non-staff expenditure from the current 23% of PHC facilities recurrent costs towards 35%, which is the target as contained in the NDoH guidelines. Based on the staff costs of CHCs, clinics and mobiles calculated in Scenario 3, the “optimised” scenario, of R1.4 billion, non-staff costs should amount to R770 million, R361 million more than current expenditure.

Overall the average recurrent cost per PHC facility attendance (headcount) (staff + non staff costs), excluding WBOTs, stands currently at R193, at R472 in Scenario 1 Policy-WISN, at R282 for Scenario 2: MRC current hours and at R271 for Scenario 3: MRC optimised.

The calculated staff and non-staff costs of each scenario include components which are covered by different sub-programs in Program 2: district management sub-programme, community-based services sub-programme, Clinic or CHC sub-programmes and the AIDS conditional grant. In order to put the additional financial resources into perspective, the cost calculations are compared to the current Program 2 budget which stands at R4.7 billion for the year 2015/16. If the scenarios were implemented in 1 year, Program 2 budget would need to increase by 57% for Scenario 1, by 24% for Scenarios 2 and by 22% for Scenario 3.

However, significant savings for the districts can be obtained through strengthened PHC services and decentralisation of delivery for chronic medicines. The combined under resourcing of PHC, insufficient number of WBOTs, no dedicated team leaders, shortage of staff and medicines in PHC facilities, has led patients to rather use hospitals OPDs. With a strong PHC system, over 138 400 current attendances in the more expensive OPDs could then attend PHC facilities. The savings for the districts would amount to R91 million. The establishment of Central Chronic Medicine Dispensing and Distribution (CCMDD) would lead to chronic patients collecting their medicines locally rather than from PHC facilities, reducing the facility staff required. When rolled out fully by the end of 2016/17, the savings would amount to R304 million. These combined savings would mean that the additional resources required would represent an increase in Program 2 budget of 48% for Scenario 1 (R2,3 billion), of 16% for Scenarios 2 (R737 million) and of 14% for Scenario 3 (R645 million).

All the scenarios, based on guidelines from the NDoH (Scenario 1) or on research from the MRC, provide an indication of possible staffing and costs implications. Whilst calculated from the analysis of each facility's headcounts and opening hours, these findings reflect the systematic application of criteria described in the methodology section. These will, however, need to be adapted to the specific situation of each facility and each district. In order to refine the work on target staffing the following is recommended.

RECOMMENDATIONS

1. To hold a meeting, or meetings, with the HR, finance, and districts (chief) directorates and district/sub-district managers to present, discuss, amend the overall scenarios.
2. To compare the current level of utilisation per sub-district to that which could be expected given the size and profile of the population. This will help ensure that a workload-based approach is developed in the perspective of a needs-based approach.
3. To hold sessions in each district to discuss suggestions for each facility in order to prioritise allocation of new staff to be recruited or decide on positions which will not be replaced.

4. To embark on an initial recruitment drive for Nursing Assistants to release existing Enrolled Nurses to become WBOTs team leaders and CHWs for the new teams as well as PHCNs and Pharmacy Assistants.
5. To assess where full-time doctors should be appointed and where doctors on call could be considered for part of the CHCs after hours' service. This will be facilitated by work on recommendations 6 and 7.
6. To carry-out research to determine the profile of utilisation by time period, during core hours and after hours, in facilities with extended hours to better identify which hours of opening, besides the core 40 hours, would more optimally increase access and utilisation, which is currently well below the national target.
7. To review by district/sub-district the geographical mapping of clinics, CHCs and districts hospitals, in relation to the population, to ensure the optimal location of 24 hours units.
8. To review the suggested modified hours' criteria on the basis of findings in recommendations 2 and 3.
9. To do a cost analysis to assess whether clinics with very low utilisation should rather be serviced by mobiles.
10. To analyse the pattern of utilisation of district hospitals out-patient departments and monitor changes.
11. With respect to the possible rollout of CCMDDs, collect baseline data to assess the impact on such facility utilisation and importantly on adherence to treatment with the hypothesis that more convenient collection points would have a positive effect on adherence.

BACKGROUND

Primary Health Care (PHC) has been widely documented to play a central role in the health status of a population. It has also been shown to be the most cost-effective platform to improve health status. From this perspective, strengthening PHC is a pivotal approach to public health care in South Africa. A strengthened PHC platform would also decrease unnecessary visits to hospitals as well as hospitalisation.

The need to strengthen PHC led to 'PHC Re-Engineering' with the PHC platform being defined by the following components:

- Community-Based Care with the Ward-Based Outreach Teams (WBOTs) composed of a community-based Team Leader, Community Health Workers (CHWs) and Home-Based Carers (HBCs);
- School Health;
- Clinics;
- CHCs, if required with MOUs; and
- Specialist District Team.

These structures and their catchment areas together with the District Hospitals constitute the Health District.

The main principles behind PHC Re-engineering are:

- Improving Access;
- Improving Quality; and
- Improving Efficiency to ensure Sustainability.

Access is largely dependent on community-based services, the location of facilities and their opening hours. **Quality** is function of availability of skilled staff as well as availability of drugs, labs tests and other consumables. **Efficiency** relates to the optimum utilisation of resources: HR (skill mix), Finances as well as opening hours.

A recent study of PHC staffing in five sub-Saharan countries emphasizes that additional resources are required but that current resources can also be used more cost-effectively (Willcox M., 2015)

As part of the Health Systems Strengthening work, in collaboration with the Albertina Sisulu Centre for Global Health and Research (ASCGHR) of the Walter Sisulu University, the North-West provincial department of health needs to assess the resources implications of strengthening the PHC platform. As a first step, the focus has been placed on the following components of the PHC platform: WBOTs, Clinics and CHCs, as they represent the bulk of the PHC expenditure. For this phase of the initiative, it was assumed that no changes will take place in the other components of the PHC platform.

Currently, Compensation of Employees (CoE) represents 74% of clinics and CHCs costs and there is a recognition that staff norms are necessary to ensure an equitable deployment of staff which in the short term includes the right quantity of the right skill mix for the type of facility and its level of utilisation. The National Department of Health (NDoH) has published guidelines for implementation of staffing norms: (National Department of Health, Republic of South Africa, 2015) based on the Workload Indicator Staffing Norms (WISN) tool developed by the World Health Organisation. The District Health System Policy Framework and Strategy 2014 to 2019 of the NDoH (Aug 2015) states that WISN should be used to determine staffing. High level assessment of the staffing and costs implications of this policy by the North-West provincial department of health led the department to state that these norms represent long term targets rather than being implementable in the short term. ASCGHR, in agreement with the department, decided to also investigate other shorter term staffing norms and scenarios. The South-African Medical Research Council developed PHC staffing norms in 2011 for the NDoH at the time of discussions on PHC Re-engineering (Daviaud E, 2012). These were based on results of surveys regarding time per type of consultation, as well as scope of practice of the different categories of staff. An updated version of the staffing norms was used to develop two scenarios.

This report presents the methodology used and the results obtained for each of the following scenarios:

- Current Situation;
- Scenario 1: Policy Scenario with current Clinics and CHCs opening hours;
- Scenario 2: MRC Scenario with current Clinics and CHCs opening hours;
- Scenario 3: Optimised MRC Scenario with changed Clinics opening hours and current CHCs hours.

Suggestion for some next steps with regard to an incremental implementation given the financial constraints of the province.

Methodology

WBOTS:

The policy regarding staffing norms is still being finalised at the NDoH, The following norms, extracted from the 2012 SAMRC document, are amongst those being discussed. Whilst originally the team leader was expected to be a full-time professional nurse working in the community and liaising with the facilities, the shortage of professional nurses led to the suggestion that the team leader be an Enrolled Nurse.

Table 1. WBOT Team Composition

	Rural	Deep Rural	Urban/Peri Urban
Population per Team	6 000	6 000	6 000
Number Team Leaders	1	1	1
Number CHWs	7	11	6
Number HBCarers	5	8	4

The number of teams, team leaders, CHWs and HBCs were calculated by sub-district based on its population and the relative share of rural/deep-rural/urban-peri-urban based on District Health Information System (DHIS) classification. The modelled numbers were compared to current numbers to provide information on shortage/excess by category and sub-district. As currently all the team leaders are facility managers rather than dedicated managers, all the modelled team leaders had to be considered in the 'shortage' category. CHWs and HBCs are combined in these calculations. The same assumptions are applied to Scenario 1, 2 and 3.

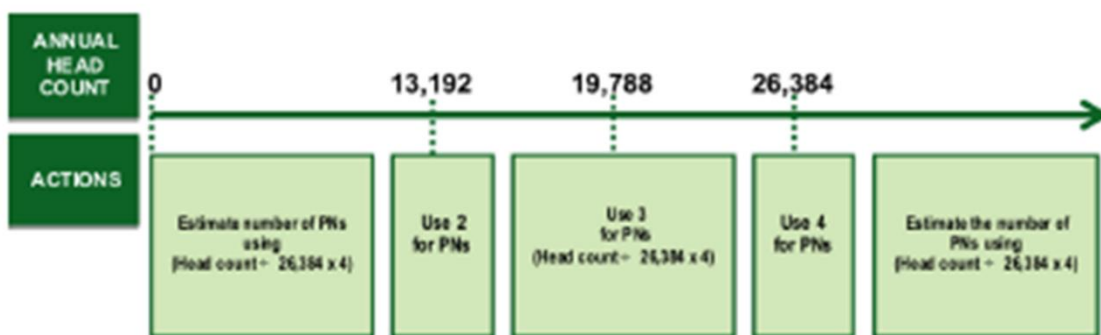
CLINICS AND CHCS

Assessment of staffing requirements was limited to core staff for this exercise: managers, doctors, clinical associates, specialised midwife/PHCN, professional nurses, enrolled nurses, nursing assistants, counsellor, pharmacy assistant post-basic, admin/data persons.

For Scenario 1: Policy, staffing norms for clinics and CHCs were extracted from the guidelines supplied by the NDoH. These were developed using the WISN tool developed by the WHO. These norms include staff to compensate for time off. Staff is expected to work an average of 191 days a year. The guidelines indicate at which level of utilisation (number of headcounts per year) to move from minimum to maximum norms.

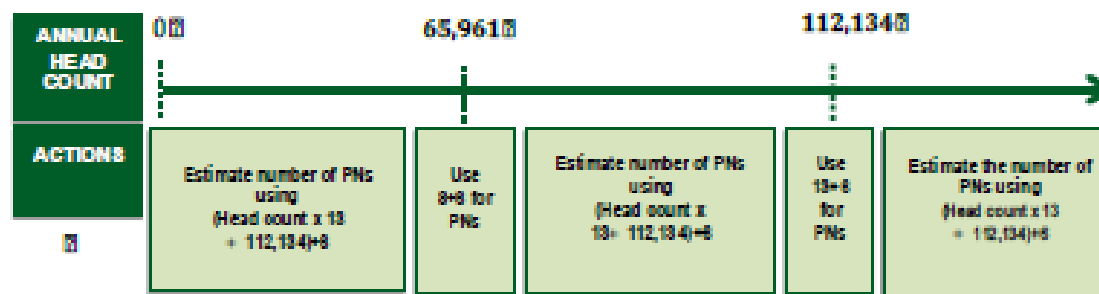
Table 2. WISN Norms for Clinics and CHCs

CLINICS	Standard Norms					
	40 Hrs/week		84 Hrs/week		168 Hrs/week	
Category	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Operational Manager/Facility Manager	1	1	1	1	1	1
PN/CNP	2	4	5	7	8	10
Enrolled Nurses	3	7	6	10	9	13
Cleaner	1	2	4	5	7	8
Lay Counselor	2	2	2	2	2	2
Admin Clerk/ Data capturer	2	3	5	6	8	9
Pharmacy assistant	1	2	1	2	1	2
Medical Practitioner	0,25	0,5	0,25	0,5	0,25	0,5



CHCs	168Hrs/week	
	Minimum	Maximum
Middle Manager	1	1
Nursing MOU		
Operational Manager	1	1
Advanced Midwife	8	9
PN	10	12
EN	13	16
Cleaner	7	8
Nursing OPD		
Operational Manager	1	1
PN	8	10
EN	13	19
Cleaner	2	4
Nursing Casualty		
Operational Manager	1	1
PN	8	9
EN	9	11
Cleaner	7	8
Pharmacy		
Pharmacist	1	1
Pharmacy Assistant	1	2
Support HRH		
Counsellors	5	7
Admin Clerks/Data Capturer	11	13
Medical		
M.OS	4	5
Clinical Associates	8	10

Figure 2: Normative guides benchmark points for determining the CHC benchmark normative guide



* Figure 2 above Included an adjustment factor (8) that should be added to account for 7 days and 24 hours operational requirements.

As the WISN norms only cover clinics and CHCs/MOUs, for the purpose of comparison with current and other scenarios, target staffing for WBOTs and mobiles as calculated in scenario 2 have been added to calculate total target FTEs and difference in cost with the current situation.

For Scenarios 2 and 3, the staffing norms suggested by the SAMRC are as follows, based also on an average of 191 days a year per FTE”

- Management: 1 FTE per 150 headcounts/day + 2 days a month for meetings – PHCN.
- Clinical Work: 1 PN FTE per 35 patients/8 hrs day. Other staff categories FTEs calculated as a function of the number of PNs as follows:

Table 3. Skill Mix for Clinical work in MRC Scenario

Provisional Target Skill Mix : Ratio to 1 Nurse FTE								
Clinics/Satellites	PN	Dr	PHCN	Enrolled Nurse	ENA	Counsellor	Pharmacy Assistant Post-Basic	Admin
	1,0	0,07	0,08		0,32	0,40	0,38	0,39
Provisional Target Skill Mix : Ratio to 1 Nurse FTE								
CHCs	PN	Dr	PHCN	Enrolled Nurse	ENA	Counsellor	Pharmacy Assistant Post-Basic	Admin
	1,0	0,10	0,24		0,40	0,40	0,30	0,50

- In addition 30% of doctors’ time in clinic is added to their clinical time to reflect doctors travel time to clinics.
- Staff requirements are calculated for core hours (40 hours/week) and after hours separately, based on staff required for workload, using the norms shown in Table 3. Even in a 24x7 facility the large majority of patients attend during the core hours.
- Minimum staff requirements reflect the staff which must be present during all opening hours, representing the staff skeleton, even if the number of patients is very low, a situation observed in some facilities during after-hours. Counsellors are part of the minimum staff requirement during core hours only.
- The number of staff required is calculated by comparing staff required for workload and minimum staff requirement, and the highest value is selected.

-

Table 4. Minimum staff requirement MRC scenarios

TYPE OF FACILITY	PN	Dr	PHCN	Enrolled Nurse	ENA	Counsellor	Pharmacy Assistant Post-Basic	Admin
CHC	0	1	1		1			1
CHC+MOU		1	1		2			1
Clinic/Satellite			1		1			1

- For mobiles, the monthly actual working hours including travel are applied to a target staff of 1 PN and 1 Nursing Assistant to calculate the target FTEs.

For Scenarios 2 and 3, FTEs required to replace staff who are off are presented separately as a ‘pool’ to optimise the deployment of that staff according to the needs of CHCs, clinics and mobiles. This pool is added to the target number of FTEs.

Information on yearly headcounts per facility was extracted from the DHIS April 2014-March 2015. Information on current staffing per category of staff was provided by the Human Resource Directorate from Persal, and was reviewed and corrected by district/sub-district managers who also provided data on opening hours and WBOTs staffing.

CHANGED OPENING HOURS

Examination of the information on workload and opening hours showed that it could be possible to **optimise access, equity and efficiency** by using common criteria to inform opening hours for clinics. For example a 40 hours clinic seeing currently an average of 271 patients a day for the 5 days it is open it is suggested opening hours of 168 hours a week. Other 40 hours clinics with an average of 5 or 7 patients a day (25 to 35 a week) it is suggested to open 16 hours a week, or a 168 hours clinic with 23 patients a day it is suggested to be opened only 40 hours a week. Clinics with between 70 and 120 patients a day it is suggested to be opened 44 hours a week which includes 4 hours on a Saturday morning, thereby improving access, with the view that such Saturday morning opening could over time include also clinics with lower patient load.

This approach was used to model **Scenario 3**. Such an approach must however be verified against the geographical location of clinics, as some clinics may require to remain open for longer hours even with only a few patients, due to their isolated geographical locations. The criteria used for linking workload and opening hours were as follows:

Table 5. Workload and Opening Hours

Headcounts/ Year (up to)	Suggested Opening Hours / Week
1 000	8
2 000	16
3 000	24
4 000	32
20 000	40
35 000	44
45 000	56
60 000	84
over	168

COSTING

The mid-point salary and benefit package, as shown in Table 6 below, was applied to each staff category to cost current staffing and target staffing as per each scenario, in order to calculate target staff cost for WBOTs, mobiles, clinics and CHCs, and also the difference with the current situation. Staff costs are expected to represent 65% of recurrent costs with non-staff costs (drugs, labs, transport....) the remaining 35%. In order to ensure that non-staff costs can be covered adequately, these have been calculated as a function of the target staff cost of Scenario 3.

Table 6. Mid-Point Salaries Package

	Middle Manager	Operational Manager	Dr	Medical Associate*	PHCN/Advanc ed Midwife	PN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor*	CHW*	Pharmacist Assistant Post-Basic	Admin + Data Capturer
Salary	517065	473 187	859 086	373 533	373 533	271 062	170 436	130 632	36 000	30 000	199 755	110 739
Benefit (36%)	186 143	170 347		134 472	134 472	97 582	61 357	47 028			71 912	39 866
Total	703 208	643 534	859 086	508 005	508 005	368 644	231 793	177 660	36 000	30 000	271 667	150 605
* Assumed similar to PHCN						* +10% NPO management						

Results

CURRENT SITUATION

The combined FTEs for WBOTs, Mobiles, Clinics and CHCs are presented below per district, amounting to a cost of R1.15 billion, just under R910 million for CHCs, clinics and mobiles and R249 million for WBOTs, assuming an average of R3 000 a month per CHW.

Table 7. Current FTEs and staff cost

CURRENT FTEs: WBOTs, Mobiles, Clinics, CHCs										
	Dr	PHCN	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor	CHWs	Pharmacist Assistant Post-Basic	Admin + Data Capturer	
Bojanala	11	70	368	256	82	281	1 562	16	304	
Dr Kenneth Kaunda District	22	77	191	19	122	146	1 142	9	107	
Dr Ruth Segomotsi Mompoti	2	59	193	150	69	123	1 401	12	113	
Ngaka Modiri Molema	10	99	210	222	57	188	2 179	19	200	
NW Total FTEs	45	305	962	647	330	738	6 284	56	724	
STAFF COST FOR : WBOTs, Mobiles, Clinics, CHCs										
R 000s - 2015	Dr	PHCN	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellors	CHWs	Pharmacist Assistant Post-Basic	Admin + Data Capturer	TOTAL
Bojanala	9 261	35 560	135 661	59 339	14 568	11 128	61 855	4 347	45 784	
Dr Kenneth Kaunda District	18 800	39 116	70 411	4 404	21 674	5 782	45 223	2 445	16 115	
Dr Ruth Segomotsi Mompoti	1 437	29 972	71 148	34 769	12 259	4 871	55 480	3 260	17 018	
Ngaka Modiri Molema	8 785	50 292	77 415	51 458	10 127	7 445	86 288	5 162	30 121	
STAFF COST	R 38 283	R 154 941	R 354 636	R 149 970	R 58 628	R 29 225	R 248 846	R 15 213	R 109 038	R 1 158 781

CURRENT AND MODELLED WBOTS

The table below displays the WBOTs per district, reflecting both the current situation and the target staffing. As there is currently no dedicated team leaders, this is done by facility managers, additional team leaders (Enrolled Nurses) are required for all the teams to ensure optimum working of the teams. The province would require 527 new Enrolled Nurses team leaders and a total of 7 257 CHWs/Home Based Carers, an additional 973 CHWs/Home-Based Carers, compared to the current situation. This target staffing for WBOTs is used in all scenarios. The modelled cost of WBOT teams amounts to R410 million, representing an additional R161 million compared to the current situation.

Table 8. Current and Modelled WBOT teams

	Actual		Modelled		DIFFERENCE	
	Number WBOTs Teams	Number CHWs + HBCarers	Number WBOTs Teams	Number CHWs + HBCarers	Team Leaders*	CHWs + HBCarers
NORTH-WEST						
Bojanala	109	1 562	231	3 335	-231	-1 773
Dr Kenneth Kaunda Distr	72	1 142	91	955	-91	187
Dr Ruth Segomotsi Mom	62	1 401	75	1 104	-75	297
Ngaka Modiri Molema	122	2 179	130	1 863	-130	316
NORTH-WEST	365	6 284	527	7 257	-527	-973
Cost (R 000s)		R 248 846	R 122 155	R 287 362	R -122 155	R -38 516

SCENARIO 1: POLICY

The WISN guidelines were applied to clinics and CHCs, target staff for mobiles (not covered by WISN) was based on 1 PN and 1 Nursing Assistant per mobile and FTEs for mobiles calculated to ensure coverage of both travel and clinical time. Target staffing and difference between current and target staffing are presented. The cost of target staffing for clinics and CHCs, based on the WISN norms, would amount to R3 billion, the other components calculated in the other scenarios amount to R45 million for mobiles and R410 million for WBOTs, a total of just under R3.5 billion for all the components combined.

Table 9. Scenario 1 Policy, Target FTEs and Staffing Cost

FTEs TARGET STAFFING										
NORTH-WEST PROVINCE	Dr	PHCN Management	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor	CHW	Pharmacist Assistant Post-Basic	Admin + Data Capturer	
CLINICS	98	257	1 299	1 938	-	554		411	1 173	
MOBILES			85		85					
WBOTs				527			7 257			

CHCs	Middle Manager	Operational Manager	Dr	Medical Associate	Advanced Midwife	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor	Pharmacist Assistant Post-Basic	Admin + Data Capturer
NORTH-WEST PROVINCE	46	138	184	368	368	1 196	1 610	-	230	46	506

COST OF TARGET STAFFING - R 000s												
NORTH-WEST PROVINCE	Middle Manager	Operational Manager	Dr	Medical Associate	Advanced Midwife/PHCN	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor + CHWschwS	Pharmacist Assistant Post-Basic	Admin + Data Capturer	TOTAL
CHCs	32 348	88 808	158 072	186 946	186 946	440 899	373 187	-	8 280	12 497	76 206	R 1 564 187
CLINICS			84 229		130 557	478 889	449 215	-	21 938	111 655	176 687	R 1 453 171
MOBILES						31 441		15 152				R 46 593
WBOTs							122 155		287 362			R 409 517
												R 3 473 468

SCENARIO 2: MRC SCENARIO WITH CURRENT OPENING HOURS

Using the MRC document staffing norms, the scenario shows shortages in all categories of staff apart from Enrolled Nurses. The cost of target staff for clinics and CHCs amounts to R1.5 billion, mobiles to R45 million and WBOTs to R410 millions, a combined total of R1.9 billion, an additional R772 million compared to the current situation.

Table 10. Scenario 2: MRC scenario with current opening hours – staffing and costs

Total Target FTEs								
	Dr	PHCN	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor/ CHW	Pharmacist Assistant Post-Basic	Admin + Data Capturer
CHC+MOU	192	259	151	-	418	116	84	247
Clinics and Satellites	50	445	481	-	459	323	290	476
Mobiles	-	-	69	-	69	-	-	-
Pool to cover time off	61	172	172	-	231	108	93	178
Mobiles,Clinics,CHCs	302	876	872	-	1 177	547	467	901
WBOTS				527		7 257		
NW TOTAL	302	876	872	527	1 177	7 803	467	901

*+10% NPO management

Target Staff Cost Rd 000s								
	Dr	PHCN	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor/ CHW	Pharmacist Assistant Post-Basic	Admin + Data Capturer
	259 776	444 758	321 425	122 155	209 046	309 011	126 868	135 665
								R 1 928 705

Difference Number FTEs: Current-Target								
	Diff Dr	Diff PHCN	Diff PN	Diff Enrolled / Staff Nurse	Diff Nursing Assistant	Diff Counsellor/CHWs	Diff Pharmacist Assistant Post-Basic	Diff Admin + Data Capturer
Mobiles,Clinics,CHCs	-260	-572	92	647	-847	193	-411	-178
WBOTS				-527		-973		
NW TOTAL	-260	-572	92	120	-847	-780	-411	-178

Gap / Excess in Staff Cost R 000s								
	Diff Dr	Diff PHCN	Diff PN	Diff Enrolled / Staff Nurse	Diff Nursing Assistant	Diff Counsellor/ CHWs	Diff Pharmacist Assistant Post-Basic	Diff Admin + Data Capturer
	R -223 362	R -290 579	R 33 915	R 27 815	R -150 478	R -30 873	R -111 655	R -26 808
								R -772 024

SCENARIO 3: OPTIMISED SCENARIO WITH MODIFIED HOURS

This scenario uses the MRC scenario staff norms but applies them to opening hours which have been modified in a number of facilities to improve equity, access and efficiency. This scenario is based on criteria which link level of utilisation and opening hours as presented in the methodology section. The cost of target staffing for the optimised scenario would amount to R1.8 billion, an additional R681 million compared to current expenditure.

Table 11. Scenario 3: Optimised scenario with modified opening hours: staffing and costs

Total Target FTEs								
	Dr	PHCN	PN/CPN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor/ CHW	Pharmacist Assistant Post-Basic	Admin + Data Capturer
CHC+MOU	192	259	151	-	418	116	84	247
Clinics and Satellites	47	319	507	-	405	394	301	405
Mobiles	-	-	66	-	69	-	-	-
Pool to cover time off	60	142	177	-	218	125	95	160
Mobiles,Clinics,CHCs	299	720	901	-	1 109	635	480	811
WBOTS				527		7 257		
NW TOTAL	299	720	901	527	1 109	7 891	480	811

Target Staff Cost R 000s									
	Dr	PHCN	PN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor/ CHW	Pharmacist Assistant Post-Basic	Admin + Data Capturer	
Mobiles,Clinics,CHCs	256 736	365 797	332 180	-	197 058	25 127	130 400	122 189	R 1 429 488
WBOTS	-	-	-	122 155	-	287 362	-	-	R 409 517
NW TOTAL	256 736	365 797	332 180	122 155	197 058	312 490	130 400	122 189	R 1 839 005

Difference Number FTEs: Current-Target								
	Diff Dr	Diff PHCN	Diff PN	Diff Enrolled / Staff Nurse	Diff Nursing Assistant	Diff Counsellor/ CHW	Diff Pharmacist Assistant Post-Basic	Diff Admin + Data Capturer
Mobiles,Clinics,CHCs	-257	-417	61	647	-781	105	-424	-88
WBOTS				-527		-973		
NW TOTAL	-257	-417	61	120	-781	-868	-424	-88

Gap / Excess in Staff Cost R 000s									
	Dr	PHCN	PN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor*	Pharmacist Assistant Post-Basic	Admin + Data Capturer	
NW TOTAL	-220 785	-211 838	22 487	27 815	-138 752	-31 235	-115 187	-13 253	R -680 747

NON-STAFF COSTS

Costs of drugs, laboratory tests, transport and other non-staff expenditure were calculated for CHCs, clinics and mobiles, excluding WBOTs. NDoH guidelines indicate that staff cost should represent 65% of facilities recurrent costs and non-staff costs 35%. Based on the staff costs of CHCs, clinics and mobiles in Scenario 3, the lowest of the three scenarios at R1.4 billion (65% of recurrent costs), non-staff costs should amount to R770 million (35% of recurrent costs), R361 million more than the non-staff costs expenditure in PHC facilities.

COMPARING SCENARIOS

To provide a better overview of the different scenarios, the table below presents the current and target staffing as well as the staff cost and the additional costs compared to current expenditure for CHCs, clinics, mobiles and WBOTs. Staff costs would need to increase by R2.2 billion for Scenario 1,, by R772 million for Scenario 2 and by R681 million for Scenario 3.

Table 12. Comparison of current staff and costs with the three scenarios

	CURRENT AND TARGET FTES											
	Middle Manager	Operational Manager	Dr	Medical Associate*	PHCN/Advanced Midwife	PN	Enrolled / Staff Nurse	Nursing Assistant	Counsellor*	CHW	Pharmacist Assistant Post-Basic	Admin + Data Capturer
Current			45		305	962	647	330	738	6 284	56	724
Scen. 1: Policy/WISN	46	138	144	368	625	2 580	4 075	85	554	7 257	457	1 679
Scen. 2: MRC current hours			302		876	872	527	1 177	547	7 257	467	901
Scen. 3: Optimised -MRC changed hours			299		720	901	527	1 109	635	7 257	480	811

NON-STAFF COSTS IN CHCs, CLINICS AND MOBILES			
R 000s	Current	Suggested	Difference
Non- Staff Cost	408 989	769 724	360 735
% Staff Cost	26%	35% of Scenario 3	

CURRENT PHC COSTS FOR WBOTs,MOBILES, CLINICS & CHCS			
	Staffing	Non Staff	Total
Current	1 158 781	408 989	1 567 770

NOTE: These costs DO NOT REPRESENT ALL PHC COSTS rather recurrent costs for CHCs, Clinics, Mobiles and WBOTs

ADDITIONAL Resources Required compared to Current			
R 000s	Staffing	Non Staff	Total
Scen. 1: Policy/WISN	2 314 687	360 735	2 675 422
Scen. 2: MRC current hours	772 024	360 735	1 132 759
Scen. 3: Optimised -MRC changed hours	680 747	360 735	1 041 482

GAP AS % PROGRAMME 2 BUDGET	
Budget 2015 Program 2	4 704 036
Scenario 1: Policy / WISN	57%
Scenario 2: MRC current hours	24%
Scenario 3: Optimised -MRC changed hours	22%

The staff costs of each scenario for CHCs, clinics and mobiles, excluding costs on WBOTs, were applied to the number of headcounts for these facilities for the year 2014/15, to calculate average staff cost per headcount. Non-staff cost per headcount were calculated in the same way. The average cost per headcount (staff + non-staff) amounted to R193 in the current situation, R472 for Scenario 1, R282 for Scenario 2 and R271 for Scenario 3.

Table 13. Cost per headcount in CHCs, clinics and mobiles

COST PER HEADCOUNT: CHCs, CLINICS AND MOBILES				
Total Headcounts 2014-15	8 123 967			
	Staffing	Non Staff	Total	
Current	R 143	R 50	R 193	
Scen. 1: Policy/WISN	R 377	R 95	R 472	
Scen. 2: MRC current hours	R 187	R 95	R 282	
Scen. 3: Optimised -MRC changed hours	R 176	R 95	R 271	

IMPACT OF SHIFT FROM HOSPITALS TO PHC AND CCMDD

With increased access to better staffed PHC services where drugs are available, a shift from hospital out-patient attendances (OPDs) to PHC services can be expected. An average of 48% of district hospitals OPDs, ranging from 19% to 75%, are not referred, and considered as attendances which should take place at PHC level, a total of 127 605 across the province, at an average recurrent cost per visit of R896. (OPDs are counted as 1/3 of a patient day equivalent). The recurrent cost of these visits reaches R114.4 million. In regional hospitals, not referred OPDs amounted to 10 802 with a recurrent cost of R14.4 million. The combined 138 407 not referred OPD attendances costed hospitals R128.8 million. If these 138 407 hospital attendances shifted to PHC facilities, in the context of Scenario 3, with an average recurrent cost per visit of R271, PHC facilities would incur an additional cost to R37.5 million. For the district the overall saving would amount to R91.3 million a year.

A Central Chronic Medicine Distribution and Dispatching (CCMDD) system is being set-up. The MRC study shows that an average of 15% of headcounts are for collection of chronic medicines only. With an average cost of R25 per delivery (drugs + delivery), the CCMDD cost would amount to R31 million when fully rolled out. PHC facilities expenditure with fewer headcounts would decrease by R335.5 million. Introducing CCMDD would save R304.5 million.

The combined savings of the two interventions would amount to R396 million.

Table 14. Possible Savings

Non-Referred OPD attendances	
Number Non-Referred OPD attendances	138 407
Hospital Cost R000s	R 128 778
PHC costs	R 37 468
Total PHC Headcounts incl transfer from OPD attendances	8 262 374
Cost Headcounts with transfer OPDs- Scenario 3	R 2 236 679

Non-Referred OPD attendances + CCMD	
% headcounts collection chronic meds only	15%
# headcounts collection chronic meds only	1 239 356
Drugs + Delivery cost per packet	R 25
Total delivery cost R000s	R 30 984
New Headcounts in PHC facilities	7 023 018
Cost new Headcounts - Scenario 3	R 1 901 177
Cost with CCMDD	R 1 932 161

Savings transfer OPD attendances	R 91 311
Savings CCMDD	R 304 518
Total Savings	R 395 829

Discussion

The reassessment of the PHC staffing in the North-West province is aimed at improving equity, access, quality and efficiency. In an overall context of poorly resourced PHC platform, this assessment targets an improvement in health status of the population, but also a shift from 'over' utilisation of hospitals.

The main reasons for low utilisation of PHC services include poor health-seeking patterns, poor accessibility, inadequate staffing and unavailability of drugs. The development of the community-based services with the WBOTs aims at improving help-seeking patterns and adherence for chronic conditions. Experience of several provinces has shown that in areas with dedicated team leaders who spend time in the community, support and supervise CHWs and ensure the linkage with facilities and hospitals, the impact of the WBOTs on early ante-natal care (ANC) attendance, immunisation and adherence is significantly higher. Some teams have witnessed the almost cancellation of TB defaulters which in turn will contribute to reduce the very dangerous and costly drug-resistant TB. Ensuring that the whole province is covered with WBOTS means that 527 teams are running, up from the current 365, with 527 Enrolled Nurses as dedicated team leaders and 7 257 CHWs (an additional 973 compared to the current 6 284).

Scenarios for target staffing which combine the 'right' quantity of the 'right' combination of staff is necessary to ensure a safe and quality coverage of the opening hours. Skill mix has also an important impact on efficiency as shortages of pharmacy assistants or nursing assistants put additional pressures on PHCN or PNs and employing more PNs to compensate for a lack of support staff is more costly whilst it does not improve quality.

Vast differences were observed between facilities in terms of levels of utilisation and opening hours. Scenario 3 aimed at suggesting a more systematic approach to ensure more equity but also to enable medium size clinics to move from 40 to 44 hours a week with opening the clinics on Saturday mornings to improve access and lower utilisation of hospitals OPD, whilst reducing opening hours with facilities with low utilisation.

Shortages of all categories of staff were observed in all scenarios. The shortage of doctors is very high in all the districts and all scenarios. Clinics have very limited coverage by doctors. In CHCs all scenarios assume, as per policy that a doctor needs to be on site at all hours. In CHCs with limited utilisation, it may be justified to have a doctor on call between 8pm and 8am in particular during the week. Shortage of doctors to visit clinics and CHCs reflects a wider shortage in the public sector aggravated in the rural areas (Kotzee TJ, 2006) and imaginative approaches will be required to address this gap. Shortages of PHCNs were also prevalent partly due to their role as facility managers in all clinics (all three scenarios) but also in CHCs (scenarios 2 and 3). Scenario 1 selected ENs and no Nursing Assistants for clinical support, whilst Scenarios 2 and 3 suggested Nursing assistants and no enrolled Nurses.

With financial constraints, non-staff expenditure tends to be cut with a resulting shortage of drugs, laboratory tests or transport, pushing patients to attend hospital OPDs. The costing aimed at moving the non-staff expenditure from 23% of PHC facilities recurrent costs towards 35%, the target in the NDoH guidelines. Overall the average recurrent cost per headcount (staff + non staff) in PHC facilities, excluding WBOTs, stands currently at R193, at R472 in Scenario 1 Policy-WISN, at R282 for Scenario 2: MRC current hours and at R271 for Scenario 3: MRC optimised.

The calculated staff and non-staff costs of each scenario include components which are covered by different sub-programs in Program 2: community service doctors are paid from district management sub-programme, the same for WBOTs in some districts, whilst in other districts WBOTs are paid from the community-based services sub-programme. Staff in facilities are paid from the Clinic or CHC sub-programmes but some are also paid from the AIDS conditional grant. Amongst non-staff costs some drugs and laboratory tests and supplies are paid also from the AIDS conditional grant. In order to put into perspective the additional financial resources, costs calculated are compared to the current Program 2 budget which stands at R4.7 billion for year 2015/6. If the scenarios were implemented in 1 year, Program 2 budget would need to increase by 57% for Scenario 1 and by 24% for Scenarios 2 and by 22% for Scenario 3.

However, significant savings for the district can be obtained through strengthened PHC services and decentralisation of delivery for chronic medicines. The combined under resourcing of PHC, insufficient number of WBOT teams, no dedicated team leaders, shortage of staff and medicines in PHC facilities, has led patients to rather use hospitals OPDs. With a strong PHC, over 138 400 attendances in the more expensive OPDs could attend PHC facilities. The savings for the districts would amount to R91 million. The creation of CCMDD would lead to chronic patients collecting their medicines locally rather than from PHC facilities, reducing thus the facility staff required. When rolled out fully by the end of 2016/17, the savings would amount to R304 million. These combined savings would mean that the additional resources required would imply an increase in Program 2 budget of 48% for Scenario 1 (R2,3 billion), of 16% for Scenarios 2 (R737 million) and of 14% for Scenario 3 (R645 million).

These scenarios based on guidelines from the NDoH (Scenario 1) or on research from the Medical Research Council provide an indication of possible staffing and costs impact. Whilst calculated from the analysis of each facility headcounts and opening hours, these findings reflect a systematic applications of criteria described in the methodology section. These will need to be adapted for the specific situation of each facility and each district. In order to refine the work on target staffing, the following is recommended.

Recommendations

1. To hold a meeting, or meetings, with the HR, finance, and districts (chief) directorates and district/sub-district managers to present, discuss, amend the overall scenarios.
2. To compare the current level of utilisation per sub-district to that which could be expected given the size and profile of the population. This will help ensure that a workload-based approach is developed in the perspective of a needs-based approach.
3. To hold sessions in each district to discuss suggestions for each facility in order to prioritise allocation of new staff to be recruited or decide on positions which will not be replaced.
4. To embark on an initial recruitment drive for Nursing Assistants to release existing Enrolled Nurses to become WBOTs team leaders and CHWs for the new teams as well as PHCNs and Pharmacy Assistants.

5. To assess where full-time doctors should be appointed and where doctors on call could be considered for part of the CHCs after hours' service. This will be facilitated by work on recommendations 6 and 7.
6. To carry-out research to determine the profile of utilisation by time period, during core hours and after hours, in facilities with extended hours to better identify which hours of opening, besides the core 40 hours, would more optimally increase access and utilisation, which is currently well below the national target.
7. To review by district/sub-district the geographical mapping of clinics, CHCs and districts hospitals, in relation to the population, to ensure the optimal location of 24 hours units.
8. To review the suggested modified hours' criteria on the basis of findings in recommendations 2 and 3.
9. To do a cost analysis to assess whether clinics with very low utilisation should rather be serviced by mobiles.
10. To analyse the pattern of utilisation of district hospitals out-patient departments and monitor changes.
11. With respect to the possible rollout of CCMDDs, collect baseline data to assess the impact on such facility utilisation and importantly on adherence to treatment with the hypothesis that more convenient collection points would have a positive effect on adherence.

References

- Daviaud E, Z. H. (2012). *Staffing norms in the context of PHC Re-engineering - Report to the National Department of Health*. Cape Town: South-African Medical Research Council.
- Kotzee TJ, C. I. (2006). What interventions do South African qualified doctors think will retain them in rural hospitals of the Limpopo province of South Africa? *Rural Remote Health*. 2006 Jul-Sep;6(3):581. Epub 2006 Sep 6.
- National Department of Health, Republic of South Africa. (2015). *Implementation guideline of health workforce normative guides and standards for fixed PHC facilities*.
- Willcox M., P. W. (2015). Human resources for primary health care in sub-Saharan Africa: progress or stagnation? *Human Resources for Health* 2015, 13:76 doi:10.1186/s12960-015-0073-8.