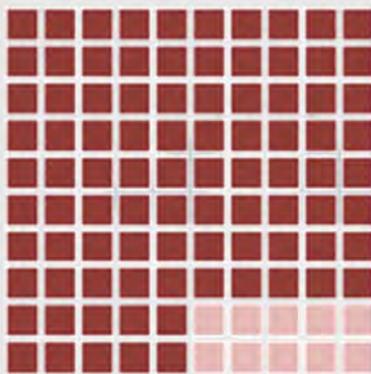
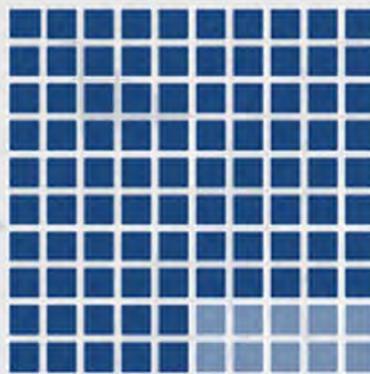


Developing a common strategy
amongst South African PEPFAR
partners towards achieving the three
90% targets as set by UNAIDS in South
Africa by 2017.

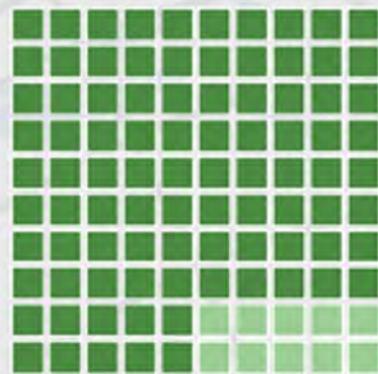
90-90-90 Colloquium Report for PEPFAR Partners



90%
know their status



90%
receive treatment



90%
have suppressed viral load

Premiere Hotel Midrand
9 September 2015

Funded through:



Presented by:



Contents

Contents	1
Executive summary	2
1 Introduction.....	4
2 Background.....	5
3 Colloquium proceedings.....	11
3.1 Target 1: 90% of all people living with HIV will know their HIV status.....	11
3.1.1 Introduction	11
3.1.2 Self-Testing.....	12
3.1.3 Community-Based Counselling and Testing (CBCT).....	13
3.1.4 Workplace testing.....	14
3.1.5 Facility-based testing	14
3.1.6 Data Management	15
3.1.7 Incentives.....	15
3.1.8 Reaching men	16
3.1.9 Improving linkages to care.....	16
3.1.10 Policy and practice issues:	17
3.2 Target 2: 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy	18
3.2.1 Managing loss to follow-up	18
3.2.2 Customer Care	19
3.2.3 Scaling up of treatment services	20
3.3 Target 3: 90% of all people receiving antiretroviral therapy will have viral suppression.	22
4 Annexure	24
Annexure A: Programme	25
Annexure B: List of attendees	26
Annexure C: Presentations.....	28

Executive summary

The aim of the Colloquium was to develop a common strategy among South Africa PEPFAR partners towards achieving the three 90% targets set by UNAIDS for 2020 in South Africa by 2017.

In order to reach the first target, 90% of PLHIV knowing their status, efforts to identify PLHIV (Adults and Children) through testing will have to be scaled up dramatically. Based on the current treatment initiation CD4 guidelines, South Africa is initiating nearly 90% of eligible PLHIV *with known status*. However, the gap will become significant when South Africa moves to the Test and Treat method, especially in reaching men. As such, a business as usual approach, will not support reaching this target and recommendations to increase testing include: promoting self-testing, deploying lay counsellors in healthcare facilities, innovative community-based testing initiatives and creating incentives to encourage the public to test and incentives employers to promote work-based testing.

The major challenges in achieving the second target, ensuring that 90% of people diagnosed with HIV will received sustained treatment, revolves around the following: Improving linkages from testing to care; Monitoring patients enrolled on treatment as they move between different healthcare facilities; and creating a service delivery environment that is able to absorb and retain an additional two million plus patients given the problems that the public sector currently faces in providing services to uninsured patients. It was acknowledged that South Africa is likely to be already achieving this target for women, but not for men or key populations such as: MSM, sex workers, prisoners, adolescents and migrants. Efforts will therefore have to focus on improving linkages to care, improving the quality of services (especially for men and foreigners) and to decongesting healthcare facilities through greater utilisation of the private sector and increasing options for patients to collect medication. Additionally, the importance of preventing drug stock-outs and promoting early entry to treatment was emphasised.

Reaching the third target, ensuring 90% viral suppression, currently represents the biggest challenge. Within the ART programme, retention in care and quality of that care is a major issue with a LTFU rate of 28% for the 12 month cohort. This can be partially addressed through better data management. Innovation will be required in order to address the true loss to follow up across both HIV and TB programmes in order to achieve successful treatment outcomes through better

utilisation of the NHLS data warehouse, exploring mobile phone applications, improving patient tracing and assessing the impact of factors such as disability on retention in care.

Although the partners raised concerns regarding if there is sufficient time to inform policy changes before the PEPFAR 2017 deadline for achieving the 90-90-90 targets several national policy limitations that could hamper reaching these targets were identified in the Colloquium and efforts will be made to attempt to address these constraints.

1 Introduction

The 90-90-90 Colloquium held on 9 September 2015 at the Premiere Midrand Hotel was hosted by the Foundation for Professional Development (FPD) and attended by the major PEPFAR District Support Partners (DSPs).

The aim of the Colloquium was to develop a consensus strategy among South Africa PEPFAR partners aimed at achieving the three 90's in South Africa by 2017.

The specific objective of the Colloquium was to create an opportunity for PEPFAR implementation partners to present ideas, brainstorm and deliberate on strategies and approaches to achieve PEPFAR's ambitious goal of fast-tracking the achievement of the UNAIDS target, namely:

- 90% of all people living with HIV knowing their HIV status;
- 90% of all people living with HIV receiving sustained antiretroviral therapy; and
- 90% of all people receiving antiretroviral therapy achieving sustained viral suppression.

Additionally PEPFAR partners also focused on the following objectives:

- To identify any policy limitations that would create obstacles to achieving the 90-90-90 targets;
- To identify best implementation practices amongst partners that can assist in achieving these targets;
- To review and align activities with Department of Health's activities; and
- To make appropriate recommendations for the way forward.

The format of the 90-90-90 Colloquium was as follows:

- A 20-minute overview presentation by a subject matter expert of the current literature on strategies and approaches linked to the specific 90% target; and
- A facilitated interactive brainstorming session.

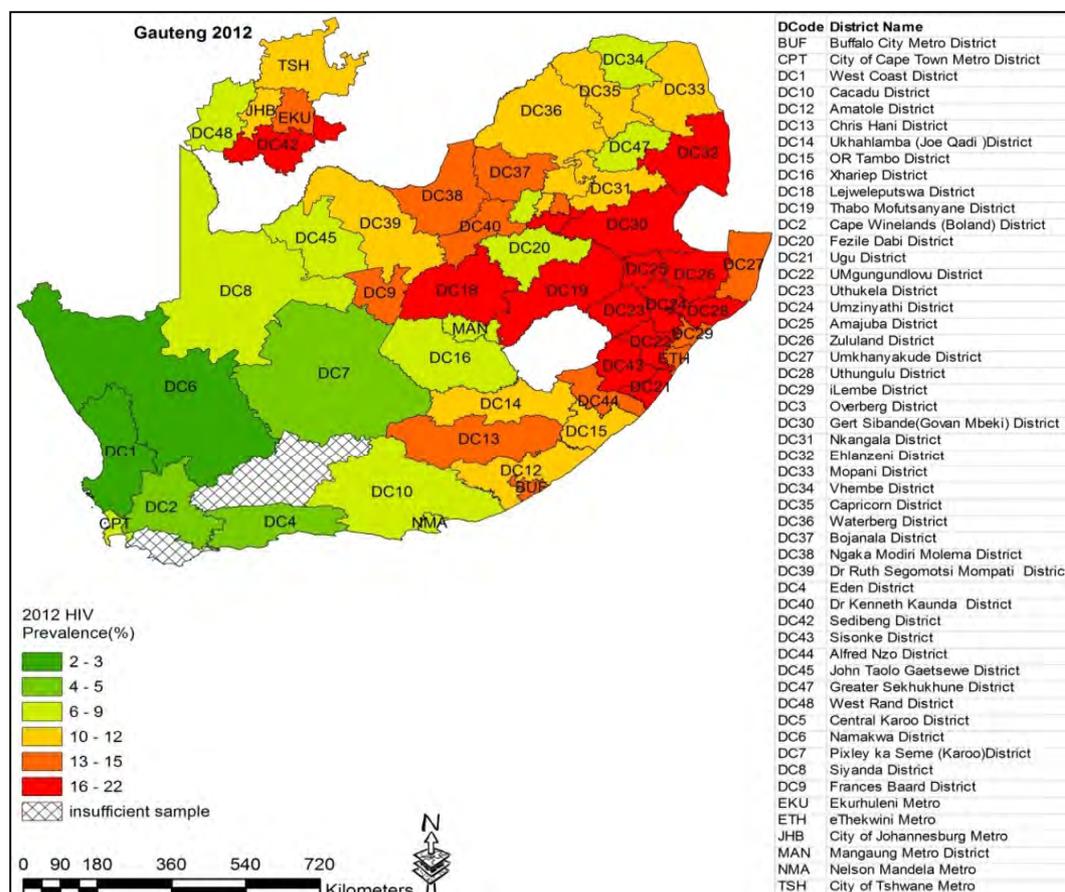
This report captures the discussions and recommendations made by the Colloquium participants. The report is supported by an edited video recording of the Colloquium that will be made available on the FPD website at the following URL: www.foundation.co.za.

2 Background

The approach the PEPFAR partners will need to adopt in order to achieve the ambitious treatment plan and help end the AIDS epidemic is to work and spend smarter which aligns to the PEPFAR strategy of “the right thing at the right time in the right place”.

To achieve this strategy, the geographic scope of PEPFAR-funded partner activities have been reprioritised to focus on specific districts in South Africa based on high HIV prevalence and burden as demonstrated in table 1 below:

Figure 1: HIV prevalence by district



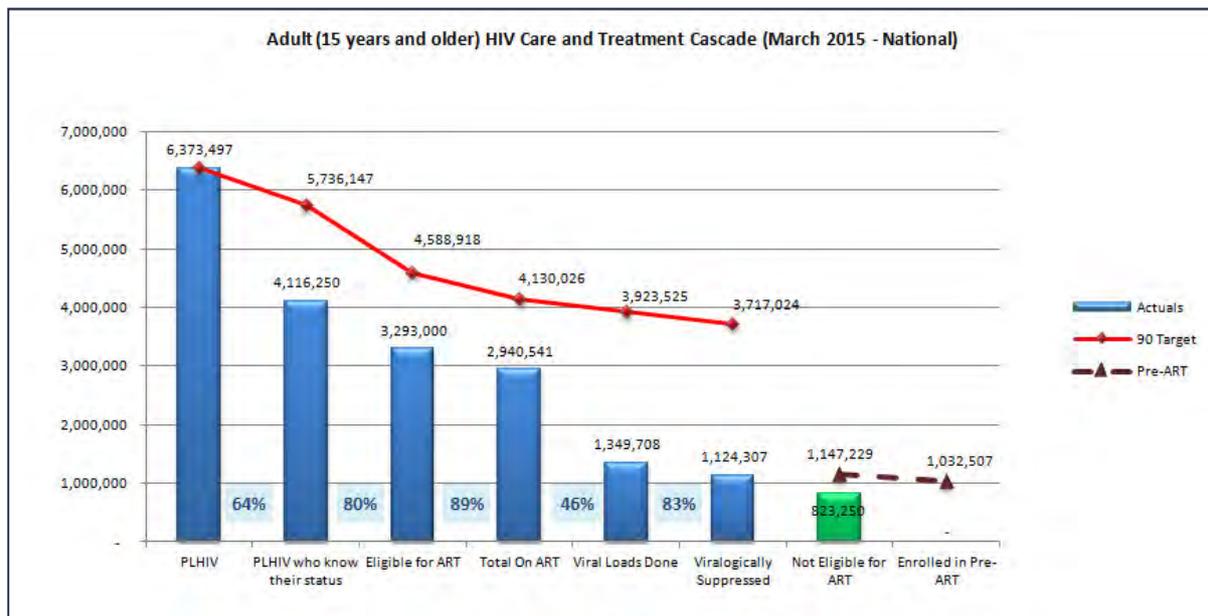
Source: NDoH 2015

In order to track performance towards achieving the goal of 90-90-90, six cascades and 33 tracer indicators have been agreed upon. Cascades represent the continuums of care for HIV treatment, PMTCT, Paediatrics and Adolescents and TB. Tracer indicators are a set of indicators that drive the improvement of the cascades as well as supporting findings of the South African Investment Case. The specific cascades have been developed as follows:

- Adult HIV Care and Treatment;
- PMTCT;
- HIV Treatment for Paediatrics under 5 years;
- HIV Treatment for Children from 5 to 15 years;
- Drug-Sensitive TB; and
- Drug-Resistant TB Treatment.

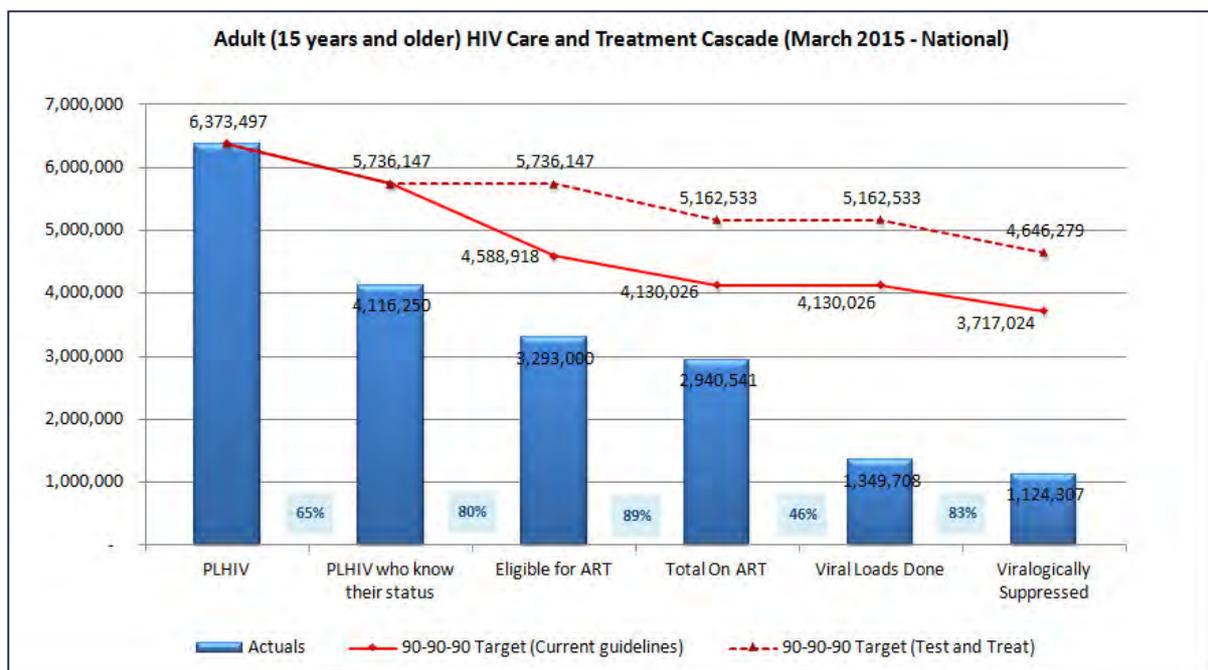
The Adult HIV Care and Treatment cascade provides a visual representation of the progress towards the achievement of the 90-90-90 goals for HIV. In particular, it highlights the gap in the identification of People Living with HIV (PLHIV) and the significant issues faced in terms of patient retention. The difference between the target and the current number of 'Adults on ART' indicates that South Africa will have to initiate and retain an additional 1,1 million 'Adults on ART' by 2020. With the current testing modalities, where the majority of testing remains facility-based, the population of newly identified People Living with HIV is limited to those accessing services at healthcare facilities. A large proportion of these clients are already eligible for ART according to South African HIV Treatment Guidelines. This reveals that PLHIV with higher CD4 cell counts are not accessing the system for testing. In an attempt to try to reach those living with HIV who do not know their status (the first 90 target) the focus needs to be on identifying People Living with HIV earlier. There is the potential to target clients in their communities rather than waiting for them to access services at health facilities. Based on data reported through the Tier.net system as at 31 March 2015, South Africa shows a Lost to Follow Up (LTFU) rate of 28% in the first 12 months of treatment. Upon reviewing the underlying reasons for this, it has been found that one of the primary causes is the significant underreporting of Viral Loads performed at the facility level. This challenge can be addressed through simple data management interventions at facility level that include developing processes to ensure Viral Load results are filed in the patient record and captured into the Tier. Net system. There are a smaller proportion of cases where Viral Loads are not being provided. In these instances, a system to identify those patients due for Viral Loads should significantly reduce the problem.

Figure 2: Adult HIV Care and Treatment Cascade - based on Current HIV Treatment Guidelines



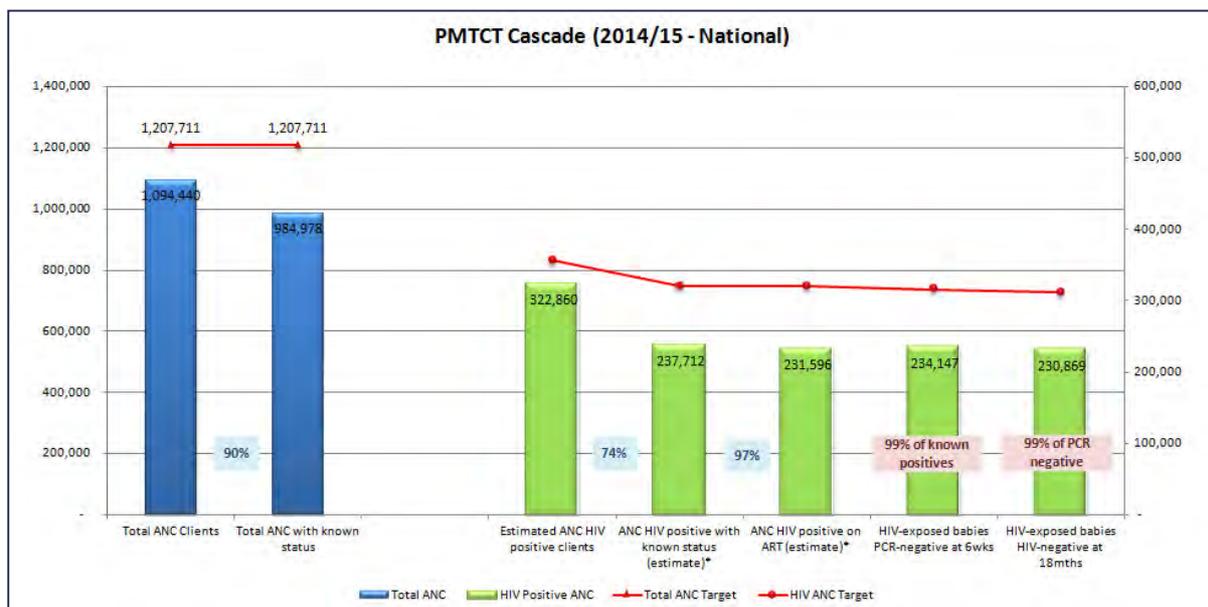
Subsequent to the PEPFAR Colloquium, a cascade was developed to illustrate the difference between the 90-90-90 targets and the current South African Guidelines, including the Test and Treat scenarios. This cascade is provided in Figure 3 below as a reference. The cascade illustrates that there are approximately 2,2 million Adults Living with HIV that will need to be initiated and retained on ART by 2020 in order to achieve the 90-90-90 goal in a Test and Treat scenario, as opposed to the 1,1 million gap faced under the current guidelines. It emphasises the need to identify PLHIV outside of healthcare facilities and retain them on treatment even further.

Figure 3: Adult HIV Care and Treatment Cascade – indicating the 90-90-90 scenario for Test and Treat

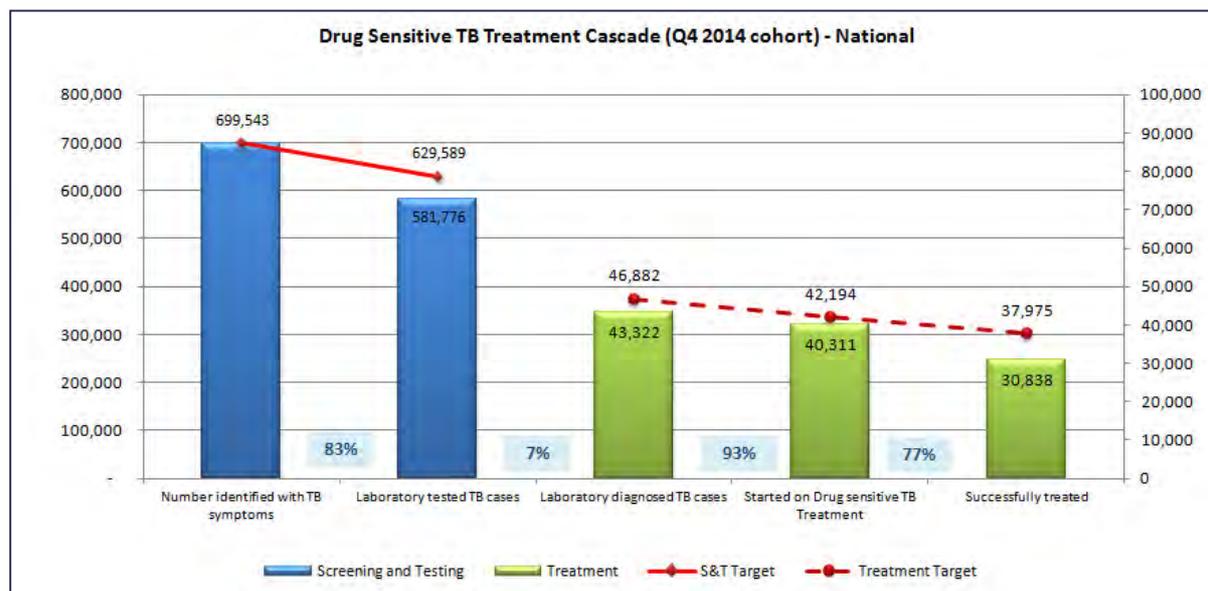


The PMTCT Cascade represents elements of the PMTCT programme for the previous year, since this is a changing cohort of women with their respective babies. With transmission rates of 1.5% at 6 weeks and 1.4% at 18 months, it is clear that the PMTCT programme has been largely successful. In order to achieve the objectives of eliminating mother-to-child transmission, the remaining gaps will be the most challenging to close. What is not reflected in the cascade, is the timing of access to antenatal care. Upon reviewing the data for early booking available through the DHIS, this remains an issue. Women continue to access antenatal care late in their pregnancy, thus reducing the effectiveness of PMTCT interventions.

Figure 4: PMTCT Cascade



The Drug Sensitive TB Treatment Cascade gives a good indication of the issues that need to be addressed across the TB treatment programme. Based on the Q4 2014, 7% of confirmed TB cases have not been initiated on TB treatment. Of those started on TB treatment within this cohort, only 77% were successfully treated. Again, this indicates an issue with retention of patients within the healthcare system once they have accessed the entry point services. However, not reflected in the cascade is the first step in identification of TB suspects. The rate of those screened for TB symptoms for Q4 of 2014 was only 23.4%, against the target of 75%. Similar to the HIV programme, it is evident that the biggest gaps exist in the identification of clients with TB and their retention within the healthcare system to achieve successful treatment outcomes.

Figure 5: Drug Sensitive TB Treatment Cascade

Major issues that have been identified through the analysis of cascades and tracer indicators:

- First 90:
 - Identification of PLHIV (Adults and Children) and TB suspects is an issue. Results show that the focus should be on urban areas and high risk populations.
- Second 90:
 - With current guidelines, we are initiating close to 90% of eligible PLHIV with known status, but the gap will be significant when South Africa moves to Test and Treat. There is a small gap in Initial Loss to Follow up for TB patients.
- Third 90:
 - This currently represents the biggest gap in all cascades. Within the ART programme, retention in care and quality of that care is a major issue with a LTFU rate of 28% for the 12 month cohort. This can be partially addressed through better data management. Innovation will be required in order to address the true loss to follow up across both HIV and TB programmes in order to achieve successful treatment outcomes.

3 Colloquium proceedings

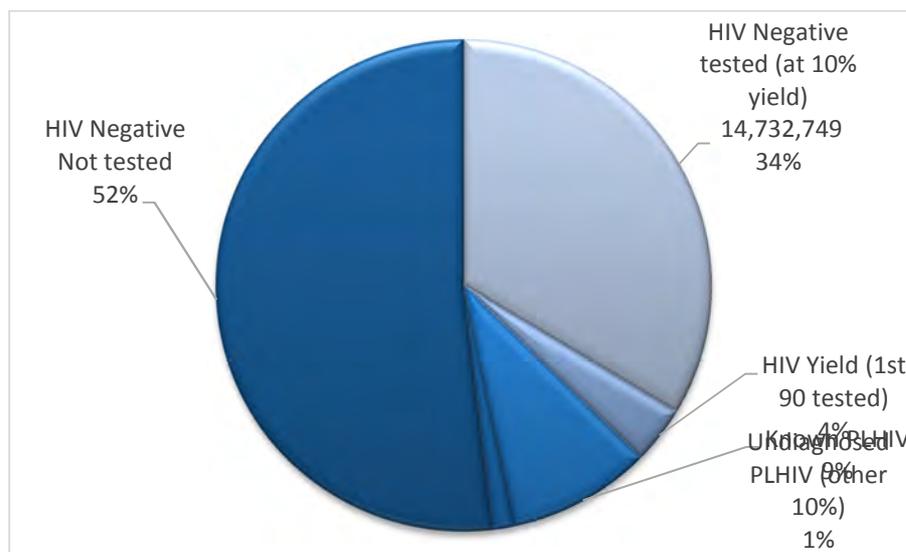
3.1 Target 1: 90% of all people living with HIV will know their HIV status

3.1.1 Introduction

Achieving the first 90% target will require strategies of aiming testing efforts towards people most likely to be living with HIV (PLHIV), rather than the approach of testing the total population. PEPFAR partners will need to consider a combination of testing modalities to reach the remaining PLHIV who have not yet been reached through testing efforts. It was acknowledged that finding this group of PLHIV will be more difficult than finding the estimated 64% of PLHIV that have already been identified. Given that a substantial number of the remaining PLHIV population will need to be identified in a community setting rather than a healthcare facility setting, PEPFAR partners will need to develop strategies to ensure linkages from testing in the community to treatment facilities that will prevent leakages.

Key success factors identified include:

- A focus on high yield (% of clients testing positive) HIV testing modalities rather than absolute numbers;
- A focus on successfully documenting linkages;
- In depth understanding of the epidemiology in specific geographic target areas; and
- Rapidly developing and disseminating evidence of lessons learned.

Figure 6: Estimated HIV testing need to reach the 1st 90% target

3.1.2 Self-Testing

Self-testing was considered by the participants as a testing modality that could be extremely beneficial in reaching the first 90% target. Literature from the region indicates that self-testing can be successfully implemented and promoting counselling call centres to people who self-test negates potential fears around increased suicide risk associated with this modality. However, there is lack of evidence to prove the efficacy of self-testing in a South African setting. Although these tests are available in the private sector, government policy does not currently include this modality. Should this model be implemented, consideration should be given to whether the market should be flooded or whether priority should be given to a specific key population for self-testing. In a prior report, the Expert Working Group of the HIV Think Tank suggested that self-testing should be promoted as a screening rather than a diagnostic test with results being provided as ‘high risk’ and ‘low risk’ rather than ‘negative’ or ‘positive’. Marketing efforts would be required to encourage people who test and get a ‘high risk’ result to seek confirmation at a health facility where treatment can be initiated if required. As part of developing self-testing models, PEPFAR partners will need to focus on developing linkages to repeat testing and treatment options taking into consideration that organisations such as FPD are developing smart-phone technology for this purpose whilst a number of organisations with experience in using call centres as a central point for linkage to care.

Recommendations:

- There is a need for rapid pilot studies around the acceptability of this modality in a South African environment. It was suggested that self-testing should be promoted to people who have already had a HIV test previously who wish to repeat their test.
- Models to promote linkage to care need to be tested

3.1.3 Community-Based Counselling and Testing (CBCT)

Index patient testing model: An intervention in the North West Province for home-based couple testing for ANC clients (index patient programme) had the biggest uptake on Saturdays and late afternoons when partners are at home. The yield around this method was also high.

Identifying hotspots: Applying epidemiological models linked to GIS mapping will help target CBCT efforts.

Ward-Based Outreach Teams (WBOTs) have trusted relationships with the community, however at this stage they are hampered by policies that prevent WBOTs from conducting testing. Providing tests through WBOTs will help to alleviate congestion at facilities and improve tracking linkages. Acceptability of WBOTs test results at clinics is a further problem as results may not necessarily be accepted and therefore a re-test may recur. Applying the screening through a single oral test approach recommended for self-testing would alleviate this concern as the facility would be required to perform a conformation test. Although the numbers referred for testing would be smaller. Partners who offer home-testing have been achieving reasonable yields.

Mobile units: the yield from this modality of CBCT is generally low and there is a suspicion that clients who test at mobile units are those who anticipate that they would be negative. However, higher yields are found when mobile units are utilised in the following settings: in high transmission areas (HTAs), in areas where there is a lack of facility-based testing and outside of normal office hours.

Stigma around testing in the community could be addressed if the scope of testing was expanded to include all NCDs. Although, this is not allowed by PEPFAR due to the funding focus on HIV and TB.

Recommendations:

- Index patient models need to be implemented;
- CBCT activities should be guided through identifying the hotspots (HTAs);
- Systematic door-to-door home-based HCT should be expanded throughout the country;
- Ward-Based Outreach Teams (WBOTs) should provide HCT as part of household visits;
- PEPFAR should be engaged to explore the possibility of expanding funding for CBCT to provide a full package of NCD screening; and
- Mobile units should only be used for targeted testing the following settings: in high transmission areas (HTAs), in areas where there is a lack of facility-based testing and outside of normal office hours.

3.1.4 Workplace testing

Workplace testing was identified as a method to upscale HCT testing to achieve targets and all employers, including government, should be encouraged to test 90% of workers in an ethical environment.

Recommendations:

- Target farm workers as it is proven that there is high yield amongst farm workers;
- Private sector should be engaged to test employees at their workplace; and
- The government should be encouraged to adopt 90% targets for testing of employees.

3.1.5 Facility-based testing

The experience of some PEPFAR partners is that the highest yield is still achieved through testing provided within healthcare facilities. There is a captive audience sitting in the clinics and hospitals and are easily accessible to dedicated testing counsellors. It has been emphasised throughout the Colloquium discussions that increasing productivity of lay counsellors and placing additional counsellors in facilities would yield more results than most modalities. Additionally, increasing counsellors will assist with linkage to care. It was noted that although national policy makes provision for an opt-out approach to consent around HIV testing this is not universally applied.

Recommendations:

- PEPFAR partners to employ and place HCT Counsellors in targeted facilities to scale up an adapted PICT model where counsellors conduct HIV tests prior to the patient seeing the healthcare provider;
- To actively promote awareness of the opt-out policy to health professionals; and
- A conducive environment for counsellors to conduct tests needs to be created with specific emphasis on ensuring space for testing and counselling in the facilities.

3.1.6 Data Management

Currently, data management is generally poor throughout the country and this will influence tracking progress across all the 90 targets. Partners must identify the reason for data loss at sub-district/district level. Internal and external data quality assurance must be instituted at all levels. The consensus was that the best data collection tool is the HCT register. Additionally, NGO and private sector testing data is not reported in DHIS preventing complete understanding on HCT uptake at a district level.

Recommendations:

- Create an organisational unit on DHIS;
- Standardise tools for CBCT modalities data collection;
- The HCT module should be made available to NGOs and funders;
- All HCT registers should be digitised (i.e.Tier.net); and
- Attempts need to be made to access testing data from the private sector.

3.1.7 Incentives

The issue of incentives was discussed at great length and although incentives are not currently provided to the public to encourage testing, the general consensus was that such incentives could improve testing uptake. There was strong support for incentivising the public and also incentivising employers to provide testing in the workplace. It was felt that incentivising healthcare providers in the public sector should be avoided. Furthermore, it was acknowledged that there would be difficulties in implementation and that incentives may lead to unanticipated consequences.

Possible incentives could include: waiving co-payments at public healthcare facilities if clients test during visits whilst an incentive for employers to ensure that all their staff are tested could be linked to acquiring bonus points on the new B-BBEE codes. Private practitioners in HTAs could be incentivised through providing access to free test kits.

Recommendations:

- Pilot programmes should be implemented to investigate the feasibility of incentives; and
- The official position of PEPFAR regarding incentives should be determined.

3.1.8 Reaching men

PEPFAR partners agree that there is an urgent need to develop strategies to target the male population. Currently, facilities are receiving many women in the healthcare system, but are unable to reach the men in communities who seldom visit public sector facilities. Cognisance was taken of the fact that men often access private sector providers even if they are uninsured. The experience of WBOTs is that they are finding that men are not at home when home visits are conducted. Providing increased access to testing outside of office hours and increasing testing in the private sector could potentially improve access to testing for men.

Recommendations:

- PEPFAR partners should work with facilities to introduce testing services outside of normal office hours;
- WBOTs should be encouraged to adapt a more flexible schedule for home visits;
- Social profiling has to be conducted to identify where men congregate to allow targeted CBCT;
- Hospital outpatient departments need to be targeted as well as visitors to hospitals; and
- Total package of care/testing including screening for NCDs for men should be implemented to overcome stigma barriers to testing; if funders will allow spending outside of HIV/TB screening.

3.1.9 Improving linkages to care

Ensuring linkages to care still remains a challenge. Various partners have experimented with call centres with reasonable results and using mobile technology, such as SMS services, also improves linkages to care. FPD will soon be deploying a mobile phone app aimed at improving linkages to care. Aurum recently completed a randomised control trial that showed low uptake of HCT in general.

However, Point-of-Care (POC) CD4 increased uptake of HIV testing, although it **did not** improve linkage to care. It was highlighted that linkages to care for prison inmates were especially problematic due to shortages of clinical staff in the correctional services facilities.

Recommendations:

- The issue of linkage to care for inmates at correctional services facilities needs urgent attention by PEPFAR partners with funding to work in these facilities;
- All partners should explore innovative ideas to increase linkage to care and share results if successful; and
- Testing partners need to develop understanding of patient volumes at referral sites and strategically direct patients away from high volume facilities.

3.1.10 Policy and practice issues:

Although the partners questioned whether there is sufficient time to inform policy changes before the PEPFAR 2017 deadline for reaching 90-90-90 targets. The Colloquium was able to identify several national policy limitations that hamper the achieving of the 90-90-90 targets by 2017.

Policy limitations currently include:

- Restrictions on WBOTs performing home-based testing;
- Restrictions placed on nurses in maternity wards only allowing them to implement birth PCR;
- Ambiguity around self-testing in government policies;
- Lack of standardised quality assurance policies;
- Lack of implementation of the unique patient identifier; and
- Lack of implementation of the opt-out approach to testing.

Recommendations:

- That policies be changed to allow other healthcare workers to test babies;
- That national policy allow self-testing;
- That WBOTs be allowed to test at the household-level;
- To address quality assurance limitations through standardisation of HCT Registers, Independent Quality Control (IQC) and proficiency testing (PT);

- That government is encouraged to provide free test kits to private providers practicing in high transmission areas; and
- That the existing policies around opt-out be actively implemented.

3.2 Target 2: 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy

The major challenges in ensuring that 90% of people diagnosed with HIV will receive sustained treatment revolves around the following: linkages from testing to care, monitoring patients enrolled on treatment as they move between different healthcare facilities and creating a service delivery environment that is able to absorb and retain an additional 2 million plus patients.

3.2.1 Managing loss to follow-up

Currently, it is difficult to fully understand the actual loss to follow-up (LTFU) in the absence of a national electronic record. Although, given that all public sector facilities utilises the National Health Laboratory Services (NHLS), the NHLS data warehouse could help understand the actual movement of patients in the public sector. In this context, a unique patient identifier is critical. Policies support the use of the national identity number (ID) for this purpose, however ID numbers are rarely filled completed on the laboratory request form. There was a strong consensus that improving compliance may support efforts to decrease LTFU. Additionally, there is a need to develop solutions to address areas where there are virtually no support services at PHC clinic level such as mental health services. This is due to the established link between LTFU and disability (i.e. depression) that has been identified. As HIV patients have a greater need for mental health services than the general public this neglected area of service delivery requires attention.

Recommendations:

- PEPFAR partners should focus on patient tracing;
- Provincial DoHs need to be engaged to budget for positions that focus on patient tracing, adherence and managing HCT counsellors;
- Ensure that tracking tools monitor the referral of patients from hospitals to PHC level;
- Hospital referred patients should be captured into the Tier system;
- Establish the required MOUs between PEPFAR partners and NHLS to allow data flow from NHLS to PEPFAR partner, in order to better improve monitoring facility results;

- Develop innovative approaches to provide disability friendly services i.e. home delivery of medication for people with mobility impairment; and
- Provide facility-based TA on interpretation of test results and specimen collection.

3.2.2 Customer Care

Ideally services should be patient friendly, i.e. accessible outside of business hours, short waiting times and customised to specific target audiences such as men. However, it was acknowledged that PEPFAR partners have limited ability to influence staff attitudes to service delivery and other factors that influence customer care. As such, partners should focus on a discreet number of interventions that are achievable in the remaining two year period of the current grant cycle and where quick gains can be achieved. These include:

- *Customer feedback through digital surveys:*

The quality of customer care in the public sector has been declining over the last 20 years. Poor quality services detrimentally influences the uptake of treatment and retention in treatment. Patients wait in queues for hours and due to the uptake of smart-phones the potential exists for patients to use that time productively and to complete digital surveys. A system like this could help prioritise facilities that require urgent efforts to increase service quality. It was acknowledged that data costs are a hampering factor and if this is to work incentives involving additional airtime may be required to get patients to participate in the system.

Recommendations:

- PEPFAR partners should support initiatives that help build relationships between healthcare workers and patients as this may improve retention in care;
 - Create mobile technology apps to conduct surveys and provide monetary contribution over the phone and link it to key performance indicators;
 - Provide airtime incentives for participants who complete surveys; and
 - Educate patients on their rights and the quality of service they should expect.
-
- *Promoting treatment for men:*

Focussing on adolescent males would require more time than is available in the remaining two year period. As such it was recommended that PEPFAR partners focus on the 25-35 age group. It was mentioned that men do not want to associate with young boys (i.e. at MMC sites). Therefore, it is

important to establish services for mature men at times that they perceive as convenient and are seen to be confidential, private and exclusive.

Recommendations:

- Focus on helping districts establish treatment services that will be accessible after hours and/or on weekends;
 - Engage with employers to provide workplace programmes; and
 - Establish mature men services i.e. MMC clinic for mature men on Friday afternoons.
-
- *Treatment for foreigners:*

Migrants are typically treated poorly in our healthcare system. There is a need to ensure that services become more migrant-friendly. Technical assistance needs to emphasise that the 90% target requires reaching 90% coverage amongst all groups, including foreigners.

Recommendation:

- Focus facility-based TA to convey the importance of achieving a 90% coverage amongst foreigners.

3.2.3 Scaling up of treatment services

There is a need for PEPFAR partners to concentrate on how to support the additional 2 million plus patients. As this additional intake will flood a public sector that already cannot cope with the population in the healthcare system and the burden of disease.

- **Human Resources**

To manage increased patient loads there is a need to optimise the existing human resources in the clinic and streamline activities in line with the principles of the ideal clinic project. This will require rapidly improving the clinical and managerial competency of the clinic and outreach staff.

Recommendations:

- PEPFAR partners must continue to develop managerial skills at facility-level i.e. the Primary Healthcare Toolkit that FPD and Right to Care are implementing;
- PEPFAR partners should support the increase of accreditation of nurses for NIMART and PC101;

- Standardization of clinical issues such as MDR TB, viral loads, sputum specimen collections, and how to use resources effectively;
- Standardization of CHWs training is important and should include mental health training as cognitive disabilities seem to be a significant contributor to loss to follow-up based on a study by UKZN study.

- ***Treatment decongestion***

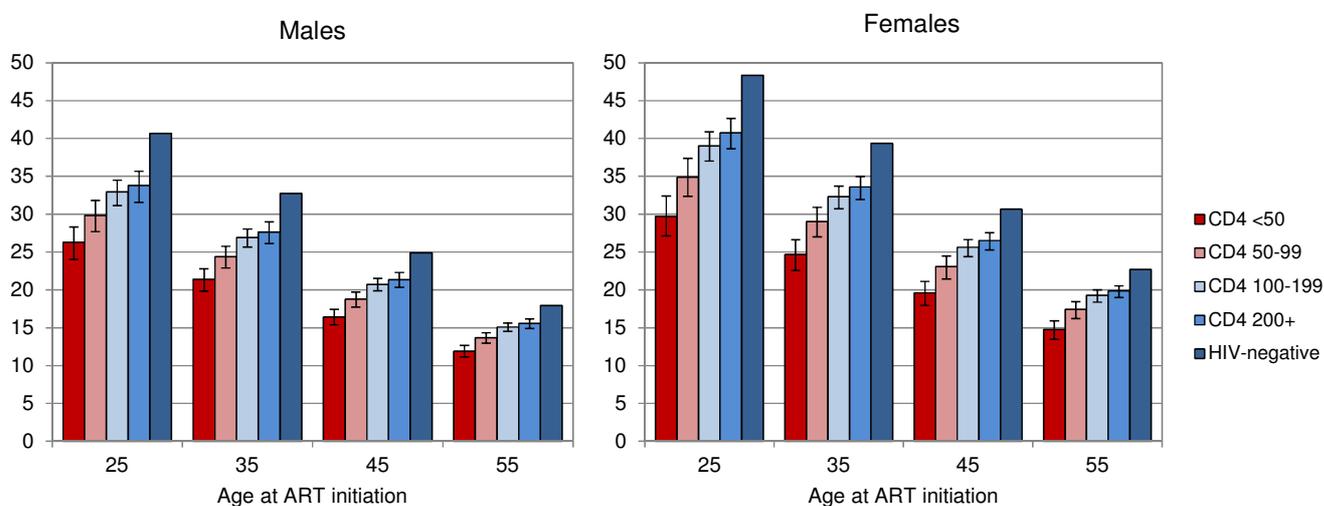
There is an urgent need for PEPFAR partners to help districts develop strategies to reduce the pressure on the clinics. An obvious approach would be to reconsider the classic system of monthly visits by stable patients to clinics purely to collect medicine. Various pilot programmes have been run by partners around utilising the private sector and there is a need to institutionalise these solutions in all districts.

Recommendations:

- Expand the adherence club model;
- Explore innovative delivery initiatives e.g. yearly delivery of ART medication;
- Expand ATM medicine dispensing models;
- Pilot models of using private providers to provide treatment for uninsured patients; and
- Expand the role of the Health Post and other community structures as medicine pick-up points.

- ***Early initiation***

Benefits of early treatment is not realised as people, especially men, do not test early. There is significant proof that early start on treatment is effective and reduces the need for regular interaction with the healthcare services.

Figure 7: CD 4 at initiation to treatment**Recommendations:**

- Focus on CBCT and effective linkages to care.

- **Drug stock-outs**

Drug stock-out issues remain a problem and improving stock visibility as a solution can address the problem. PEPFAR partners have been implementing a variety of solutions including: designing user-friendly apps, providing training and sponsoring training of pharmacy assistants. The call centre established by the HIV Clinician Society is another initiative aimed at addressing drug stock-outs.

Recommendations:

- To establish an ad-hoc working group amongst partners to share lessons learned and develop a coordinated support strategy;
- Train facility staff on supply chain principles, bin cards and electronic system; and
- Increase the availability of pharmacy assistants at clinic level.

3.3 Target 3: 90% of all people receiving antiretroviral therapy will have viral suppression.

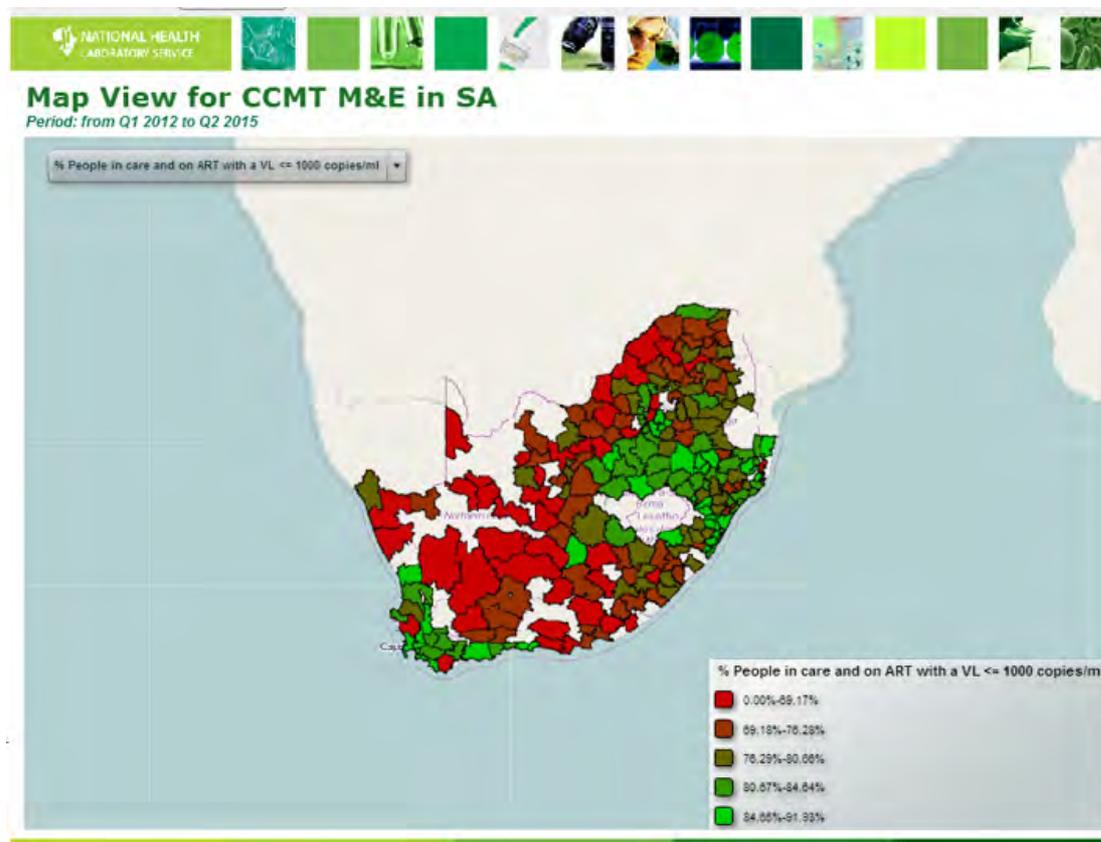
Changes in guidelines have a major impact on the NHLS and they have been scaling up infrastructure to provide increased testing. Additionally, they have been developing a data warehouse that allows reporting on viral load suppression at facility-level. As previously discussed, the lack of compliance

with the unique identifier complicates reporting. PEPFAR partners can access the data warehouse through a formal MOU that will allow partners to identify the performance of clinics. This would provide strategic information allowing PEPFAR partners to focus efforts on links that have a poor track record in achieving viral suppressions.

The data warehouse can also be connected to various mobile phone applications allowing experimentation with these applications to support viral load suppression. Theoretically, patients could be provided access to their own VL and CD4 counts. However, this would require a political decision due to concerns around confidentiality.

Various problems were identified around the availability of data to support both programmatic and clinical decision-making, such as how to channel data into the Tier.net system. Providing the facility management access to an overview of the data can help performance management and ensuring that laboratory data is recovered in the patients file and is acted on by the healthcare professionals.

Figure 8: Example of a data warehouse report



Recommendations:

- PEPFAR partners who do not yet have MOUs with the NHLS should enter into this as a matter of urgency;
- PEPFAR partners should explore potential partnerships to help develop the functionality of the data warehouse; and
- PEPFAR partners should experiment with innovative ways of ensuring adherence and compliance is everyone's concern (i.e. patient, healthcare workers, CHWs, WBOTs).

4 Annexure

Annexure A: Programme

Annexure B: List of attendees

Annexure C: Presentations

Annexure A: Programme



90-90-90

BRAINSTORMING COLLOQUIUM

Time	Activity	Speaker
08:00-08:10	Registration	
08:10-08:30	Overview of 90-90-90 context	Romy Overmeyer
08:30-09:00	Presentation- 1 st 90: <i>90% of all people living with HIV will know their HIV status;</i>	Thato Farirai
09:00-10:30	Discussion with partners	Gustaaf Wolvaardt
10:30-10:45	Tea break	
10:45-11:00	Feedback from rapporteur (1 st 90)	
11:00-11:30	Presentation- 2 nd 90: <i>90% of all people with diagnosed HIV infection will receive sustained antiretroviral treatment;</i>	Francois Venter
11:30-13:00	Discussion with partners	Gustaaf Wolvaardt
13:00-13:45	Lunch break	
13:45-14:00	Feedback from rapporteur (2 nd 90)	
14:00-14:30	Presentation- 3 rd 90: <i>90% of all people receiving antiretroviral treatment will have viral suppression</i>	Wendy Stevens
14:30-16:00	Discussion with partners	Gustaaf Wolvaardt
16:00-16:15	Feedback from rapporteur (3 rd 90)	
16:15-17:00	Wrap up and Conclusion	Gustaaf Wolvaardt

Funded through:  

Presented by: 

90% know HIV status



90% HIV start ART



90% VL suppressed



Annexure B: List of attendees

Name	Surname	Company
Peter	Baron	NDOH
Andrew	Black	WRHI
Cephas	Chikanda	Anova
Lilian	Diseko	NDOH
Thato	Farirai	FPD
Lynsey	Isherwood	NHLS
Suzanne	Johnson	FPD
Hanlie	Kapp	FPD
Thuso	Kewana	Aurum Institute
Gloria	Kgosana	WRHI
Bulelani	Kuwane	Aurum Institute
James	Letsoalo	WITS RHI
Gareth	Lowndes	TB HIV Care
Moyahabo	Mabitsi	Anova
Enoch	Manyame	WRHI
Peter	Manyike	SEAD
Cordelia	Mapempeni	FPD
Mpho	Maraisane	Aurum Institute
Neo	Masike	Aurum Institute
Thobeka	Mathebula	Aurum Institute
James	McIntyre	Anova
Jenny	Mcloughlin	TB HIV Care
Bonnie	Medeossi	brhc
Andrew	Medina-Marino	FPD
Mandla	Mlotshwo	WITS RHI
Themba	Moeti	HST
Nokuzola	Mqoqi	Beyond Zero
Alexandra	Mumbauer	FPD
Josh	Murphy	Anova
Nkhensani	Nkhwashu	FPD

Robin	Ogle	TB HIV Care
Floyd	Olsen	NHLS
Romy	Overmeyer	FPD
Liesl	Page-Shipp	Aurum Institute
Michelle	Pappin	TB HIV Care
Craig	Parker	WRHI
Gwen	Ramokgopa	FPD
Mary-Ann	Richardson	Broadreach
Molemoeng	Shebi-Magadla	TB HIV Care
Sibongile	Shezi	HST
Ntombi	Sibanyoni	FPD
Jackie	Smith	HST
Wendy	Stevens	NHLS
Charity	Tshivhengwa	FPD
Tim	Tucker	SEAD
Margot	Uys	FPD
Francois	Venter	WRHI
Ronel	Visser	HST
Gustaaf	Wolvaardt	FPD
Natalie	Woollett	WRHI

Annexure C: Presentations



Overview of 90-90-90 for South Africa

Romy Overmeyer
HOD: Strategic Information
9 September 2015

Contents

1. Introduction to 90-90-90 for SA
2. 90-90-90 Cascades
3. Conclusions



Contents

1. Introduction to 90-90-90 for SA
2. 90-90-90 Cascades
3. Conclusions



Global 90-90-90 HIV Targets

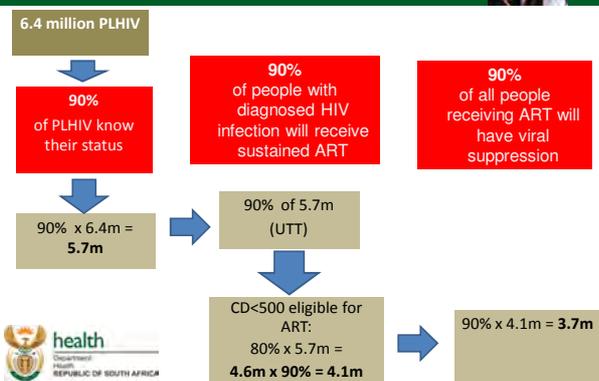
UNAIDS 90-90-90 targets for 2020 are summarized below:

- 90% of all people living with HIV will know their HIV status
- 90% of people with diagnosed HIV infection will receive sustained ART
- 90% of all people receiving ART will have viral suppression

THE TREATMENT TARGET




What does 90 90 90 for HIV mean for SA?



6.4 million PLHIV

90% of PLHIV know their status

$90\% \times 6.4\text{m} = 5.7\text{m}$

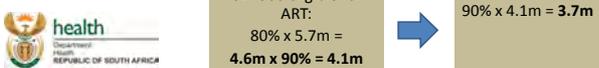
90% of people with diagnosed HIV infection will receive sustained ART

90% of all people receiving ART will have viral suppression

90% of 5.7m (UTT)

CD<500 eligible for ART:
 $80\% \times 5.7\text{m} = 4.6\text{m}$

$90\% \times 4.6\text{m} = 3.7\text{m}$



The South African Investment Case

- To improve the **allocative efficiency** of the South African HIV and TB programmes
 - what is the best mix (allocation) of effective TB & HIV interventions to get us to our targets?
- Reviewed all available data/studies to find **the most cost effective mix of interventions** against HIV and TB over next 20 years
- Aims to inform & *if necessary change* SA HIV & TB policy
- And **inform programme planning**, including domestic and donor budgets



What should we do differently?

- 1. Understand what works & does not work on the ground!**
 - Review and understand our performance
 - Use the data to inform our actions
 - Focus on the bottlenecks and why they continue
 - Develop innovative solutions
- 2. Working and spending smarter:**
 - Do **what works** - evidence informed interventions
 - In the **right places** – geographical prioritization
 - For the **right people** – most vulnerable populations
 - And where you achieve the **greatest impact**




The right places and the right people

Locality	HIV Prevalence %	HIV Incidence %	New Infections / year
Urban			
Formal	10.1 [8.8 – 11.7]	1.06 [0.84-1.28]	227 000 [180 000 - 274 000]
Informal	19.9 [17.4 - 22.7]	2.46 [1.98-2.94]	80 000 [64 000 - 96 000]
Rural			
Formal	10.4 [7.4 - 14.4]	0.84 [0.65-1.03]	19 000 [15 000 - 23 000]
Informal	13.4 [12.2 - 14.7]	0.87 [0.69-1.05]	143 000 [113 000 - 173 000]
National	12.2 [11.4 - 13.1]	1.07 [0.87 - 1.27]	469 000 [381 000 - 557 000]

No one is left behind:

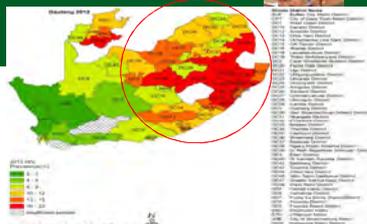
Urban informal settlements have the highest prevalence and incidence rates (2.5%) compared to urban formal areas

High HIV prevalence and incidence rates among young women and adolescent girls, key populations



Major Cities

Location Specific: District and Cities Fast Track approach



Metro	HIV Prevalence % (HSRC 2012)	Estimated number PLHIV (calculation HSRC data)
Cape Town	5.2 [3.4-7.8]	177 587
Mangaung	7.9 [5.3-11.6]	58 645
Nelson Mandela	8.3 [4.5-14.9]	90 414
Johannesburg	11.1 [8.3-14.6]	533 960
Tshwane	11.7 [8.1-16.6]	352 182
Buffalo City	13.6 [10.6-17.3]	103 943
Ekurhuleni	14.3 [10.3-19.5]	468 521
eThekweni	14.5 [11.2-18.6]	516 167
Total		2 301 419
National	12.2 [11.4-13.1]	6 400 000

Fast Track Cities: South Africa's 8 largest metros are home to 36% PLHIV



Contents

1. Introduction to 90-90-90 for SA
- 2. 90-90-90 Cascades**
3. Conclusions

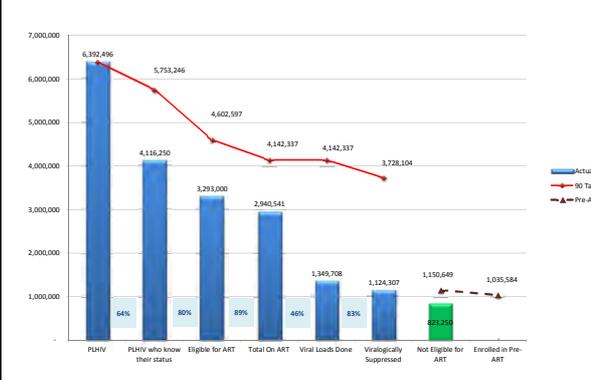


Cascades and Tracer Indicators

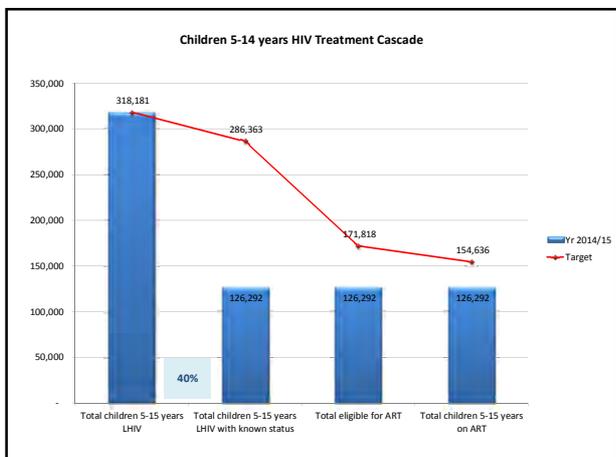
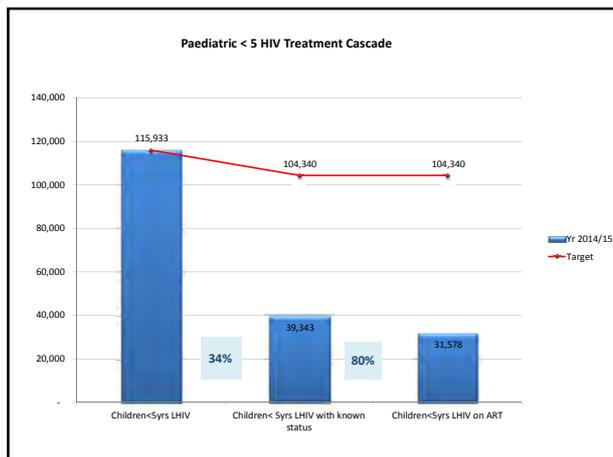
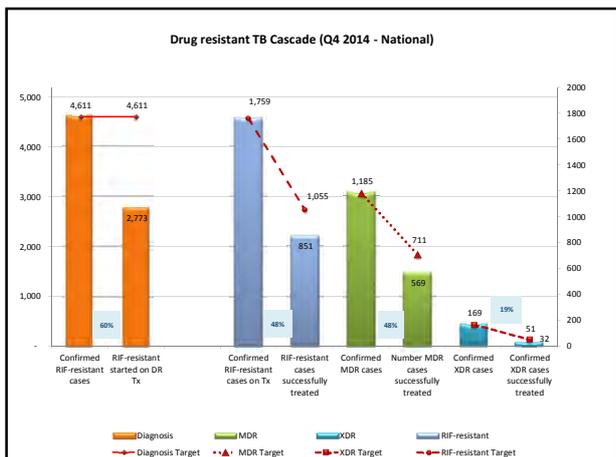
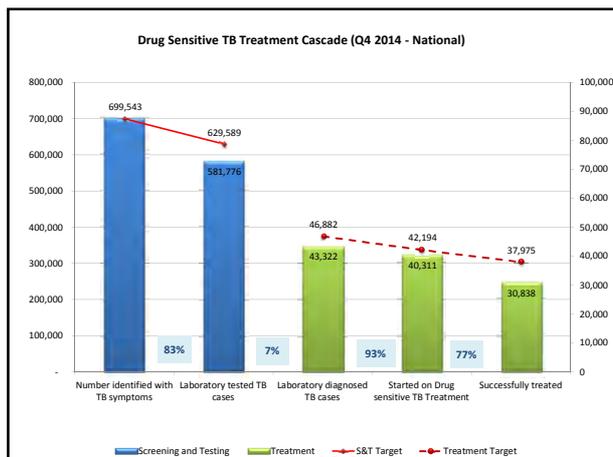
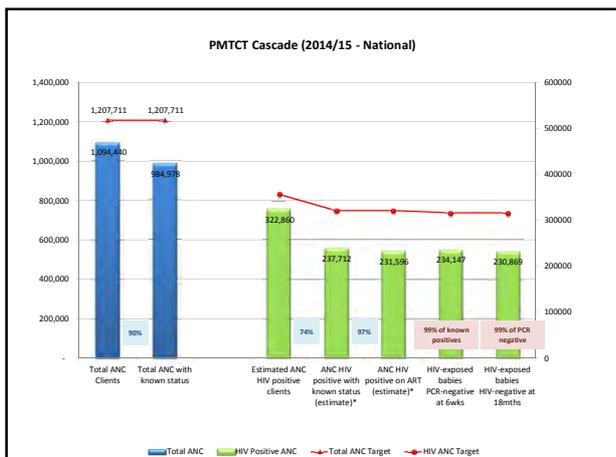
- In order to track performance towards achieving the goal of 90-90-90, 6 cascades and 32 Tracer Indicators have been developed.
- Cascades represent continuums of care for HIV Treatment, PMTCT, Paediatrics and Adolescents, and TB.
- The specific cascades have been agreed upon as follows:
 - Adult HIV Care and Treatment
 - PMTCT
 - HIV Treatment for Paediatrics under 5 years
 - HIV Treatment for Children from 5 to 15 years
 - Drug-Sensitive TB
 - Drug-Resistant TB Treatment



Adult (15 years and older) HIV Care and Treatment Cascade (March 2015 - National)



Stage	Count	%
PLHIV	6,392,496	-
PLHIV who know their status	4,116,250	64%
Eligible for ART	3,293,000	80%
Total On ART	2,940,541	89%
Viral Loads Done	1,340,708	46%
Virologically Suppressed	1,124,307	83%
Not Eligible for ART	1,150,649	-
Enrolled in Pre-ART	1,035,584	-



Contents

1. Introduction to 90-90-90 for SA
2. 90-90-90 Cascades
3. Conclusions

Conclusions

- Major issues that have been identified through the analysis of cascades and tracer indicators:
 - First 90: Identification of PLHIV (Adults and Children) is an issue. Results show that the focus should be urban areas.
 - Second 90: With current guidelines, we are initiating close to 90% of eligible PLHIV with known status, but the gap will be significant when SA moves to Test and Treat.
 - Third 90: This currently represents the biggest gap in the cascade. It can be partially addressed through better data management. Retention in care and quality of that care is a major issue with a LTFU rate of 28% for the 12 month cohort.



Thank you





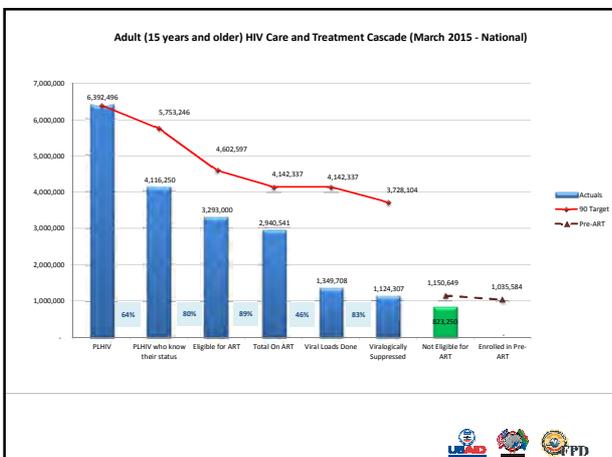
Overview

- 90-90-90 goal & what the first 90 means for South Africa
- Overview of literature of HCT modalities
 - Systematic door to door HCT (home-based)
 - Index patient HCT
 - PICT (and adapted models)
 - Mobile HCT
 - Workplace HCT
 - HIV Self testing
- Policy and QA gaps

Overview

- 90-90-90 goal & what the first 90 means for South Africa
- Overview of literature of HCT modalities
 - Systematic door to door HCT (home-based)
 - Index patient HCT
 - PICT (and adapted models)
 - Mobile HCT
 - Workplace HCT
 - HIV Self testing
- Policy gaps
- Other QA

UNAIDS 90-90-90 by 2020



How to achieve 1st 90?

Estimated HIV testing need to Reach 1st 90

- Know your epidemic
- know your response
- Do Right thing, Right place, Right time
- Use evidence based approaches
- Focus on HIV Yield (diagnosis of PLHIV)
- Focus on successful, documented linkage

What do we need to know about HIV Counselling & Testing (HCT) to reach the 1st 90 and contribute to 2nd 90??

- Which HCT modalities have the highest uptake?
 - Amongst which populations? (e.g. men, KP, AGYW, couples, etc.)
- Which HCT modalities produce the highest yield? (absolute yield & positivity rate)
 - Amongst which populations?
- Which HCT modalities work best per geographic area?
 - By uptake? By yield?
 - Urban, peri-urban, rural? Informal v. formal settlements?
- What are the best combinations of HCT modalities to produce the highest yield?
- Which interventions enable the highest linkages?
- What mobilization activities mobilize the "right" people?



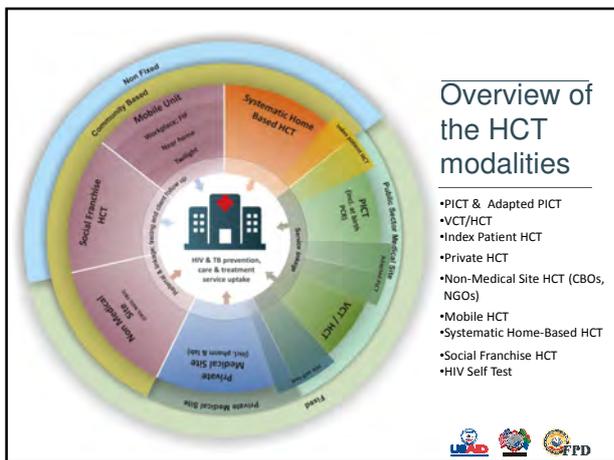
Overview

- 90-90-90 goal & what the first 90 means for South Africa

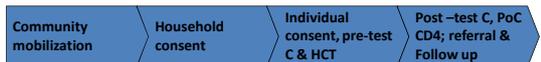
• Overview of literature of HCT modalities

- Systematic door to door HCT (home-based)
- Index patient HCT
- PICT (and adapted models)
- Mobile HCT
- Workplace HCT
- HIV Self testing

- Policy and QA gaps



Systematic home based HCT/ Door-to-door



Home-Based (HBCT) in South Africa and Uganda

OPEN ACCESS Study available online

PLOS ONE

Household-Based HIV Counseling and Testing as a Platform for Referral to HIV Care and Medical Male Circumcision in Uganda: A Pilot Evaluation

Henry Tumwebaze¹, Elioda Tumwesigye¹, Jared M. Baeten^{2,3,4}, Ann E. Kurth⁵, Jennifer Revall⁶, Pamela M. Murnane⁶, Larry W. Chang^{6,7}, Connie Celum^{8,9,10}



	Uganda: N(%)	South Africa: N (%)
HIV testing coverage	1558 (80%)	671 (91%)
HIV prevalence	152 (9.8%)	201 (30%)
Median CD4 count	467 cells/ μ L	425 cells/ μ L



HBCT Results: South Africa & Uganda

Baseline findings	SA	Uganda
Households enrolled (Q4 2011)	554	995
Adults tested	1273 (98%)	2121 (94%)
HIV+ identified	404 (32%)	232 (11%)
Newly identified HIV+	29%	48%
On ART at enrollment	39%	41%
Median CD4 baseline (not on ART)	472	423

Study closed June 2013

NIH Directors Award RC4 AI092552



Additional door to door studies

Author	Study title	Findings
Nuwaha F. et al. 2012	Effect of home-based HIV counselling and testing on stigma and risky sexual behaviours: serial cross-sectional studies in Uganda	Increase testing uptake
Sabapathy et al. 2012	Uptake of home-based voluntary HIV testing in sub-Saharan Africa: a systematic review and meta-analysis.	70% uptake of previously undiagnosed individuals
Doherty T. et al. 2013	Effect of home based HIV counselling and testing intervention in rural South Africa: cluster randomised trial.	Increased uptake of couple testing. Acceptable in SA
Van Rooyen et al. 2013	High HIV testing uptake and linkage to care in a novel program of home-based HIV counseling and testing with facilitated referral in KwaZulu-Natal, South Africa.	91% uptake 30% HIV infected



Summary of HBCT



- Using HBCT with POC CD4 and lay-counselor follow-up visits we demonstrated:
 - HBCT - **acceptable and achieves high coverage** in South Africa and Uganda
 - HBCT resulted in higher uptake of testing among **couples**
 - HBCT identifies HIV+ persons previously unaware of serostatus & at **high CD4 count**
 - HBCT **can facilitate effective linkage to HIV care**
 - With **follow-up visits**, see increase linkage to care and ART initiation
 - Significant change in **viral load suppression**



What is Index Patient HCT?

- HCT offered to households with persons known to have HIV (WHO, 2015)
- Patients who are on ART or TB treatment are approached from the clinic and informed about the benefits of testing members of their households.
- Index patient prepares household for the testing visits and schedules an appointment for the tester



Index patient process

- Community testers are based at facility level.
- All new clients testing HIV positive** are identified as potential index cases.
- Clients are educated on home testing and index case trailing.
- Client consent is sought before home visit.
- Once consent is obtained the home visit is arranged.

Index patient results from KI 10 facilities over 14 Months

District	Period	Index Clients trailed to home	Family members counselled	Counselled family members tested for HIV	Number tested positive for HIV.	Number HIV positive successfully linked to care and treatment	Number HIV positive screened for TB symptoms	TB symptoms referred for TB diagnosis
BCM	Dec 2013 - Feb 2015	2970	22634 (1:7.6)	19537 (86%)	945 (4.8%)	749 (79.2%)	684 (72.3%)	366 (54%)
Ethekwini	Feb 2014 - Feb 2015	3852	11556 (1:3)	10928 (95%)	2123 (19.4%)	2031 (96%)	2123 (100%)	641 (31%)
Umsunduzi	Dec 2013 - Feb 2015	7957	32576 (1:4.1)	28992 (90%)	6151 (21%)	5862 (95.3%)	6151 (100%)	902 (15%)
TOTAL		14779	66766	59457 (89%)	9219 (15.5%)	8642 (94%)	8958	1909



KI Results & Comments

Results

- For every 1 index client 5 people were counselled and educated on HIV**
- Among all those counselled and educated:
- There was an HIV-testing uptake of 95%
 - 59 457 : status known (all tested!)
 - 9 219 : positive status
 - 94% were successfully linked to care and treatment
 - 8 958 (97%) were screened for TB

Comments

- This strategy results in
- Good yield of HIV infections and possible TB infections
 - Identifying HIV early - good pick-up for first 90.
 - The earlier diagnosis of HIV and TB, averts some HIV and TB transmissions.

PICT

- Provider initiated counselling and testing (PICT) is the routine offer of counselling and testing to persons attending health facilities as a standard component of care.
- Recommended for malnutrition, STI,TB,ANC& KP patients regardless of epidemic type (WHO, 2013)

Great success for pregnant women first visit (98% uptake)

However challenges with patient waiting time, FP, STI and other hence recommendation of adapted PICT



PICT Studies

Author	Study Title	Findings
Mutanga <i>et al.</i> 2012	Institutionalizing provider-initiated HIV testing and counselling for children: an observational case study from Zambia	40.8% before introduction of PICT vs. 98.2% afterwards
Dalal <i>et al.</i> 2011	Provider-initiated HIV testing and counseling: increased uptake in two public community health centers in South Africa and implications for scale-up.	Increased testing twice compared to provider referral to onsite VCT
Leon <i>et al.</i> 2010	The impact of provider-initiated (opt-out) HIV testing and counseling of patients with sexually transmitted infection in Cape Town, South Africa: a controlled trial.	54.6% of new STI patients tested for HIV vs 46.2% control



Adapted PICT

- A model where counsellors offered testing to patients **before** OPD consultation resulted in the highest percentage of patients getting tested. (McNaughten *et al.* 2013)
- Considerations for selecting and implementing a PICT model
 - Efficiency and effectiveness (patient flow)
 - Provider and patient acceptably and satisfaction
 - Patient volume and workload
 - HIV prevalence
- Systems for quality assurance
- Linkages to care and treatment



Mobile HCT Studies

Author	Study Title	Findings
van Schaik <i>et al.</i> 2010	Earlier HIV diagnosis--are mobile services the answer?	Increased uptake by males, 1 st time testers, ind. early in their infection
Van Rooyen <i>et al.</i> 2013	Mobile VCT: reaching men and young people in urban and rural South African pilot studies	Reached more youth, male and rural population
Nglazi <i>et al.</i> 2012	An incentivized HIV counselling and testing program targeting hard-to-reach unemployed men in Cape Town, South Africa.	Yield of newly diagnosed HIV infections (incentivised mobile testing vs. non-incentivised mobile testing)
WHO	Recommended for KP such MSM, SW, PWID & other rural populations underserved by health care system	Warns of importance of linkage to care

Self Testing

Private or supervised self-testing	Access to self-testing	Distribution and Initiation
Private self-testing is when a person self-tests in private. (limited support)	Clinically restricted self-testing provide specific populations and groups with self-tests, as decided by policy and guidelines.	Community-based approaches to HIV self-testing involves distributing HIV self-test kits to community members through volunteers or community health workers. This approach does involve some supervision from the health worker or volunteer before and/or after individuals test themselves in private.
Supervised self-testing involves support from a health care worker or volunteer who is physically present when the individual self-tests.	Semi-restricted self-testing refers to when health care workers provide test instructions and counselling prior to distribution.	
	Non-restricted tests made available through pharmacies, clinics, shops and vending machines.	

Self Test Studies

Author	Title	Findings
Pai <i>et al.</i> 2013	Supervised and unsupervised self-testing for HIV in high- and low-risk populations: a systematic review	Acceptability 74%–96% Partner self test 80%–97%
Dong <i>et al.</i> 2014	HIV Self-testing: Can laypersons in high-prevalence South Africa perform a blood-based HIV self-test accurately?	Valid 99.1%
Choko <i>et al.</i> 2011	The uptake and accuracy of oral kits for HIV self-testing in high HIV prevalence setting: a cross-sectional feasibility study in Blantyre, Malawi	Accuracy 99.2% Rated test 98.5% "not hard at all to do"



Workplace HCT

- Testing offered at a work setting
- Several studies demonstrated high uptake however low identification of positive
- Program data has shown higher yield among farm workers



Overview

- 90-90-90 goal & what the first 90 means for South Africa
- Overview of literature of HCT modalities
 - Systematic door to door HCT (home-based)
 - Index patient HCT
 - PICT (and adapted models)
 - Mobile HCT
 - Workplace HCT
 - HIV Self testing
- **Policy and QA gaps**



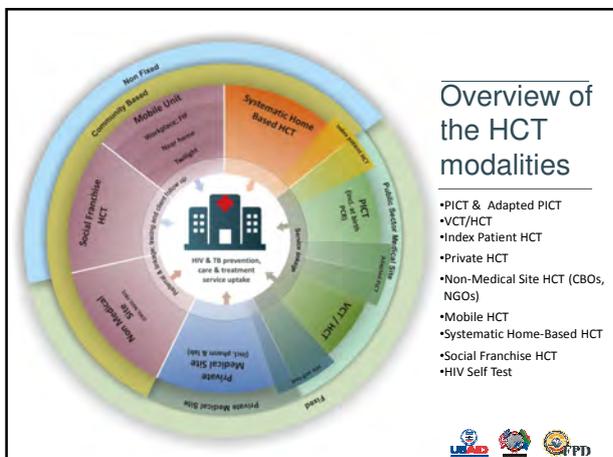
Policy and QA gaps

- Incorporate all modalities
 - Home based
 - Self test
- Linkage to care
 - POCT-CD4
- Quality assurance
 - Standardisation of HCT registers
 - IQC and PT



Summary on Modalities

- Compelling evidence on the mix of **modalities**
- High yield from **index patient/client modality**
- High acceptance, efficiency and effectiveness of **adapted PICT**
- Increased couples uptake from **HBHCT and index**
- Compelling evidence on increased condom usage after **couple testing**
- **self testing** might be acceptable need to identify target population
- Improved linkage through the use of **POCT- CD4** and early identification of asymptomatic clients
- Localised mobilisation



Thank You





The second "90"

Francois Venter
Wits Reproductive Health & HIV Research Institute (RHI)
 IAS Conference on HIV Pathogenesis, Treatment and Prevention 2015

Some quick reflections



90%

of all



living with HIV will know their HIV status

90%

of all



living with HIV will receive sustained antiretroviral therapy

90%

of all



receiving antiretroviral therapy will have durable viral suppression



- All "90s" are time dependent (with possible exception of last one)

90%

of all



living with HIV will know their HIV status

90%

of all



living with HIV will receive sustained antiretroviral therapy

90%

of all



receiving antiretroviral therapy will have durable viral suppression



- 1st 90 impacts on the efficacy - ESPECIALLY #2's

Time From Infection With the Human Immunodeficiency Virus to Diagnosis, United States



90%

of all



living with HIV will know their HIV status

90%

of all



living with HIV will receive sustained antiretroviral therapy

90%

of all



receiving antiretroviral therapy will have durable viral suppression



- We are probably very close to the 3rd 90
- Second 90: probably there for women; not men – and that's a huge problem
- Key pops also a huge problem (although can be solved) – MSM, sex workers, prisoners, adolescents, migrants

90%

of all



living with HIV will know their HIV status

90%

of all



living with HIV will receive sustained antiretroviral therapy

90%

of all



receiving antiretroviral therapy will have durable viral suppression



- Second 90 NOT just linkage to care – its retention

90%

of all



living with HIV will know their HIV status

90%

of all



living with HIV will receive sustained antiretroviral therapy

90%

of all



receiving antiretroviral therapy will have durable viral suppression



- Loss-to-follow-up can NOT be that bad – otherwise we'd return to a steady state immediately
- We're not tracking
- Why isn't this allocated to the NHLS?

90%

of all

living with HIV will know their HIV status

90%

of all

living with HIV will receive sustained antiretroviral therapy

90%

of all

receiving antiretroviral therapy will have durable viral suppression

ART coverage significantly decreased individual risk, KwaZulu Natal, South Africa (2004-11)

- Africa Centre longitudinal surveillance cohort with community and individual data
- Between 2004 and 2011, 1395 HIV seroconversions and over 53,042 person-years of observation (crude HIV incidence rate of 2.63 (95% C.I. 2.50 to 2.77) per 100 person-years)

Every % point increase in ART coverage among all HIV+ adults in a community, was associated with a 1.7% decline in the hazard of HIV acquisition ($p < 0.001$)

Is sex safe? HPTN 052

And confirmed in Partners study

7 or 96.3% reduction in transmission

Immediate

Thorn in T&T side: Individual benefit

- Conflicting observational studies
- 052 not convincing re individual data

Comparative effectiveness of immediate antiretroviral therapy versus CD4-based initiation in HIV-positive individuals in high-income countries: observational cohort study

Interpretation The benefits of immediate initiation of ART, such as prolonged survival and AIDS-free survival and increased virological suppression, were small in this high-income setting with relatively low CD4 count at HIV diagnosis. ~~The estimated beneficial effect on AIDS is less than in recently reported randomised trials.~~ Increasing rates of HIV testing might be as important as a policy of early initiation of ART.

London National Institute of Health

START and Temprano fixed this

ORIGINAL ARTICLE

Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection

The INSIGHT START Study Group*

ORIGINAL ARTICLE

A Trial of Early Antiretrovirals and Isoniazid Preventive Therapy in Africa

The TEMPRANO ANRS 1213P Study Group*

START and Temprano fixed this

Table 1: Severe morbidity in TEMPRANO study at 30 months

	% events	n	Rate / 100 PY	ack HR	p
WHO ART	11.4%	111	4.9	0.56	0.0002
Early ART	6.6%	64	2.8		
No IPT	10.7%	104	4.7		
IPT	7.2%	71	3.0	0.65	0.005

Table 1. Primary endpoint and its components in open DSMB report (15 May 2015)

	Early ART (arm A)		Deferred ART (arm B)		Hazard Ratio (Arm A/B) (95% CI)
	N	rate/100 PY	N	rate/100 PY	
AIDS, serious non-AIDS, or death (primary)	41	0.60	66	0.95	0.47 (0.32 to 0.68)
AIDS or AIDS death	14	0.20	24	0.35	0.59 (0.37 to 0.93)
Serious non-AIDS or non-AIDS death	28	0.41	41	0.59	0.67 (0.42 to 1.08) NS*

* PY = patient years. ** NS = non significant

Thanks: Simon Collins

START and Temprano fixed this

Table 1: Severe morbidity in TEMPRANO study at 30 months

WHO ART	% events	n	Rate / 100 PY	adj HR	p
WHO ART	11.4%	111	4.9		
ADG or AIG death		14	0.20	0.66	0.30 (0.17 to 0.95)
Definite non-ADG or non-AIG death		26	0.41	0.59	0.07 (0.42 to 1.08 NS)*

* PY = patient years; ** NS = non significant

David Barr: "It's easy to say that we always knew the answer... we would have a very different answer if we lived in the d4T or AZT era..."

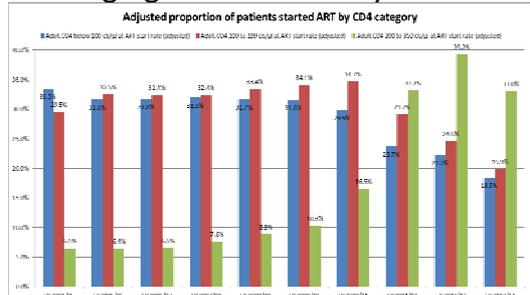
Thanks: Simon Collins



Programmes are starting to improve



Changing disease severity over time

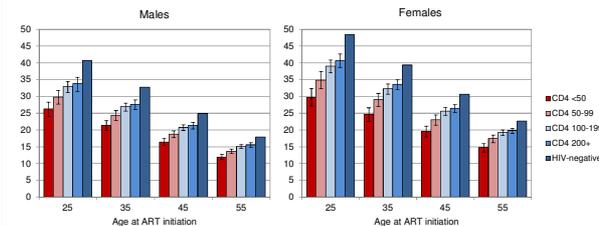


Thanks: Andrew Boule

Source: Consolidated National report covering monthly and quarterly ART data to end March 2014



Life expectancy



Near-normal expectancy for adults starting ART above 200 cells/ μ L; Currently updating this analysis



Johnson et al, PLoS Med 2013

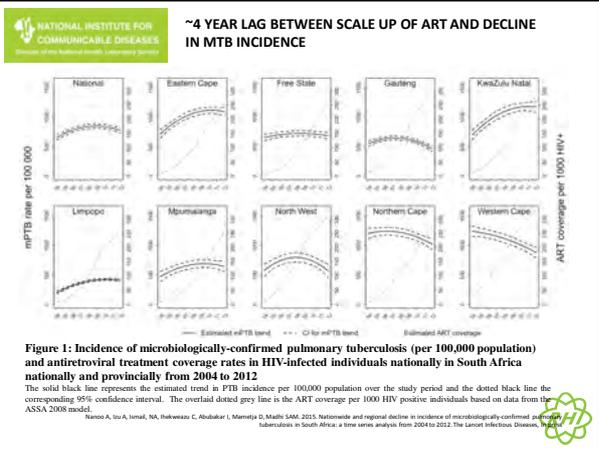


Figure 1: Incidence of microbiologically-confirmed pulmonary tuberculosis (per 100,000 population) and antiretroviral treatment coverage rates in HIV-infected individuals nationally in South Africa nationally and provincially from 2004 to 2012

The solid black line represents the estimated trend in PTB incidence per 100,000 population over the study period and the dotted black line the corresponding 95% confidence interval. The overlaid dotted grey line is the ART coverage per 1000 HIV positive individuals based on data from the ASSA 2008 model.

Namsoo A, Izu A, Ismail, NA, Inhekwazi C, Abubakar I, Mamanji D, Muthi SAM. 2013. Nationwide and regional decline in incidence of microbiologically-confirmed pulmonary tuberculosis in South Africa: a time series analysis from 2004 to 2012. The Lancet Infectious Diseases.



For prevention to work, need suppression

Time above 1500 copies: a viral load measure for assessing transmission risk of HIV-positive patients in care

Gary Marks*, Lytt I. Gardner*, Charles E. Rose*, Anne Zink*, Richard D. Moore*, Susan Holman*, Allan E. Rodriguez*, Meg Sullivan* and Thomas P. Giordano*

Objective: We examined HIV transmission potential of patients in care by analyzing the amount of prescriptive time above a viral load threshold that increases risk for transmission.
Design: Observational cohort and supplemental data.
Methods: The cohort included HIV patients who received care at an HIV clinic in the United States from 1 April 2004 to 15 March 2012, and had two consecutive viral loads during this interval. Resonance time above a viral load of 1500 copies/ml of the total observation time was determined by registering consecutive pairs of viral load results and the time intervals between those pairs. The person-time ratio controlling demographic and clinical cofactors were estimated with Poisson regression.
Results: The cohort included 1123 patients observed for a median of 177 days with a median of nine viral load results. Thirty percent of the patients had two consecutive viral loads above 1500 copies/ml. On average, viral load results by 1500 copies/ml during 25% of the person-observation time (average of 84 days per year, per patient). Percentage of person-time above the threshold was higher among patients who became HIV-positive through oral load pairs occurring a month interval (34% of observation time), patients on an observational therapy (25% of time) or among patients (25% of time) who were 15-24 years old (27% of time), and patients in the West (25% of time).
Conclusions: HIV patients in care spent an average of nearly a quarter of their time with viral loads above 1500 copies/ml, higher among some subgroups, indicating their risk for potentially transmitting HIV to others.

© Copyright © 2013 Marks et al. All rights reserved.

AIDS 2013, 27(8):947-954

Keywords: cohort study, HIV, prescriptive, transmission, viral load



Achilles heel of test & treat

- Retention retention retention
- Health system – unfriendly, unreliable
- Reliance on global manufacturing and API

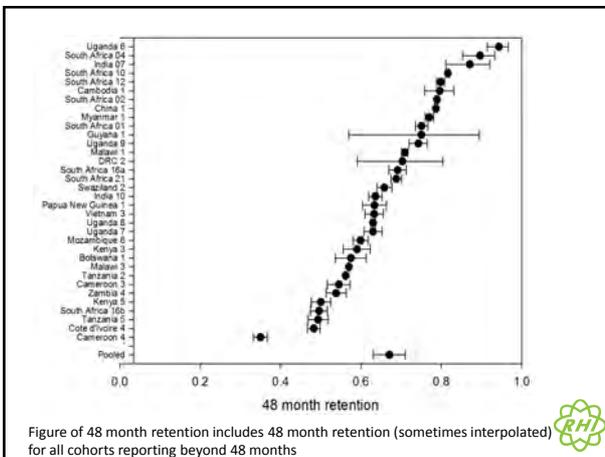
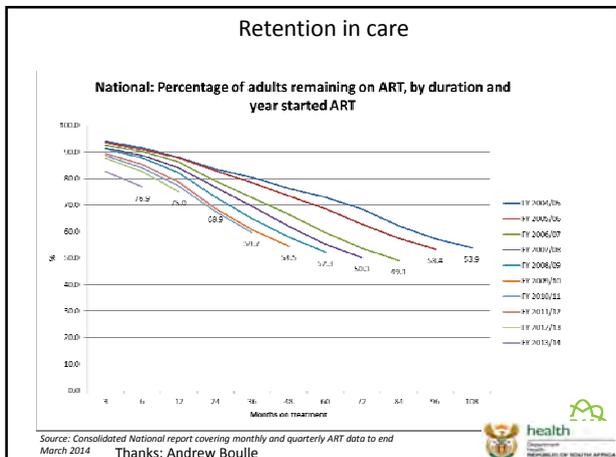
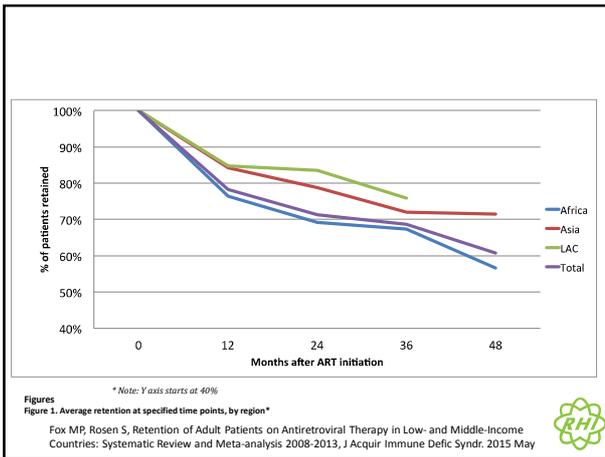
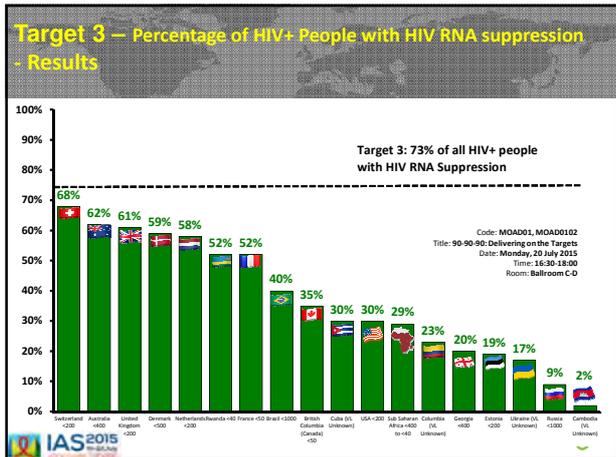


HIV TREATMENT Even in settings with good testing & ART coverage, treatment cascades still show important leakages...

Hill et al. CROI 2015 [abstr 1118]

World Health Organization

Thanks: Andrew Hill



Treatment for life

Expect a normal life expectancy:
May et al. AIDS 2014

• UK CHIC: 21 388 people started ART 2000-2010

If 35 year old man started ART:

CD4	life expectancy		
	Baseline	1 year ART	5 years ART
<200	71	78	& VL>50 54
200-349	78	78	
>350	77	81	& VL<50 80
General population	78		

Conclusion: If diagnosed, in care and on effective ART: life expectancy is normal
Great information to give to people newly diagnosed and encourage good adherence

Thanks: Julie Fox, Guys

Your life is in the hand of (an often unreliable) distributor

And it is an international problem...

And you rely on raw chemicals...

API Production capacity in metric tons

	ZDV	TDF	EFV	LPV	RLV	FTC	3TC	NVP	ABC	ATV
Reported production capacity	1189	1436	1621	101	60	412	1263	1091	122.5	21
Forecast 2015	1393	909	1680	544	130	159	1309	708	78	24

Thanks: Stavros Nicolau

Can (and should) Africa make its own medicines? BMJ 2015 – 80% generics from India

Weak rand means South Africa pays more for ARVs in latest tender

NSP REVIEW COMMENT

The National Strategic Plan for HIV/AIDS S Ts and TB has set as a target that 80% of people living with HIV must be on antiretrovirals by 2016. This equates to about 4.8 million people. In his last

Price tag of HIV response to more than double by 2033

With 3.7 million people on antiretrovirals (ARV), South Africa has the world's largest ARV programmes. But according to... and the ARV response... will more than double in the next five decades, according to new research.

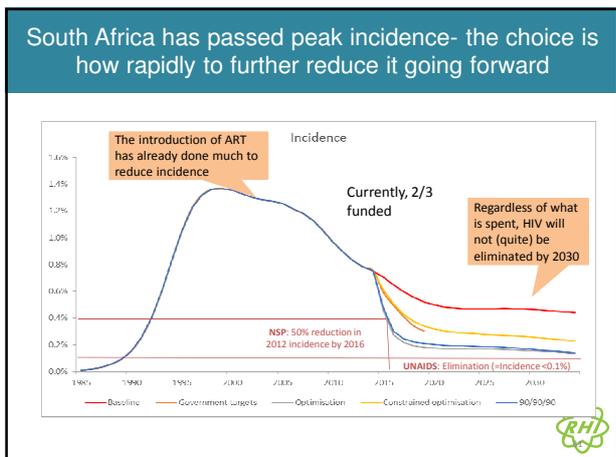
Stigma and systems

- HIV testing
- Adherence
- Re-entry into systems
- Patient controlled results – apps (TB and HIV)

South Africa's Investment Case – What are the country's "best buys" for HIV and TB?

Gesine Meyer-Rath^{1,2}, Calvin Chiu¹, Leigh Johnson³, Kathryn Schnipfel⁴, Teresa Guthrie⁵, Sarah Magni⁶, Yogan Pillay⁷, Faeed Abdullah⁸, Eva Kiwango⁹
on behalf of the Investment Case Task Team and Steering Committee

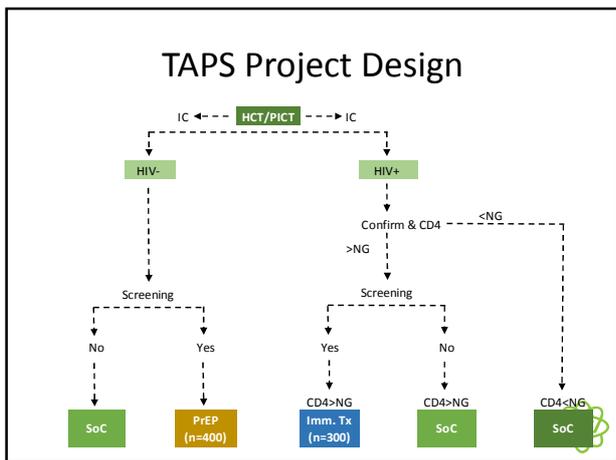
¹ Health Economics and Epidemiology Research Office (HE²RO), University of the Witwatersrand/ Boston University
² Center for Global Health and Development, Department of International Health, Boston University
³ Centre for Infectious Disease Epidemiology and Research (CIDER), University of Cape Town
⁴ Right to Care
⁵ Guthrie Consult
⁶ Anansi Health Consulting
⁷ National Department of Health
⁸ South African National AIDS Council
⁹ UNAIDS South Africa



TAPS Demonstration Project

Expanded use of ARV for Treatment And Prevention for female Sex workers in South Africa

Investigators: Robyn Eakle, Gabriela Gomez, Francois Venter, Helen Rees



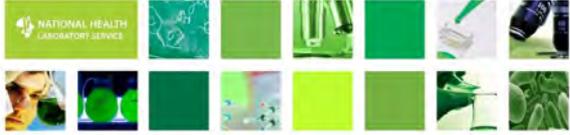
- Haven't lost a single patient

“They are so nice to us. They treat us like white people.”

Challenges specific to T&T

- Retention and tracking programmes need priority
- Return into care HAS to be made easier
- Need easier, cheaper, more robust first line
- Adherence interventions – crisis
- Friendlier services

Source: *Journal of the International AIDS Society*, 2014, 43(12): e18547. doi:10.1002/jia2.18547



Professor Wendy Stevens
On behalf of NPP team

“The Last 90”: What’s in a number?

The treatment targets



By 2020, 90% of all people living with HIV will have their HIV status tested.

tested



By 2020, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy.

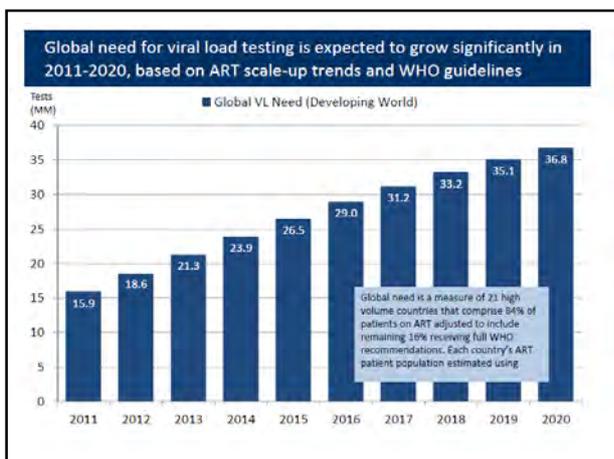
on treatment



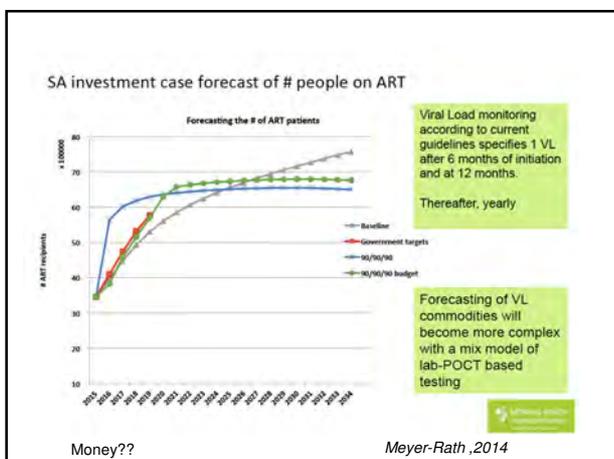
By 2020, 90% of all people receiving antiretroviral therapy will have durable viral suppression.

virally suppressed

The UNAIDS treatment initiative and the re-targeting process – Implications for laboratory medicine
Geneva, Switzerland, 16 June 2014



- ### Message 1
- Context important
 - Diminished importance of CD4
 - Clinical links to VL
 - How are we doing with VS?
 - We will describe options for:
 - Access
 - Greater accountability
 - Quality: assay and process, Access
 - Scientific based implementation
 - Disaggregated data
 - Devolution to community: community centered/compensated task shifting



- ### HIV & TB in South Africa: Laboratory perspective
- Total Population 52 Million at last census
 - Estimated 6.3 million HIV infected individuals of which 3 million are receiving ARV therapy. HIV continues to drive these testing needs.
 - Currently Conduct approximately ~3.9 million CD4 tests annually, 2.9 million viral loads and currently 360 000 EID assays (2014)
 - Acceleration of VL requirements exceeds expectations: 30%
 - over 6.5 million GeneXpert tests (March-July 2015); MTB 16 to 12%-9%; Rif Resistance:6-7%.
 - 30-40% of all public health sector laboratory expenditure for HIV&TB: (maximum 15% of total budget).
 - **Universal testing for HIV and screening for TB** – the primary objectives being to ensure that all citizens know their HIV and TB status, and to prevent new HIV and TB infections (NSP: 2012/2013-2016/2017). **Increase testing requirements**
- NSP, 2012 <http://www.doh.gov.za/docs/stratdocs/2012/NSPsum.pdf>

Clinical Links to viral suppression (VS)

- Most effective measure of **treatment success**: most NB metric in continuum of care (**SA understood this in 2004**)
- VS rates depend on definition of VF
SA; VL: <1000c/ml; VL <400c/ml; CDC: VL <200 c/ml
- Strong biological marker for adherence: direct link to VS
- Community VL or % VF: programmatic: link to performance of interventions
- Less affected by other infections at reasonable CD4 counts (TB, malaria)
- 2 annual appointments correlates well with CD4>500 and VS
- High risk populations for achieving and maintaining VS: children, adolescents, pregnant women, incarcerated, IDU
- Socio-economic factors linked directly to VS: <50 copies/ml: language barrier, education, financial status
- Poor SE status linked to a high probability on virological non suppression
- Used to better select sentinel sites for targeted intervention

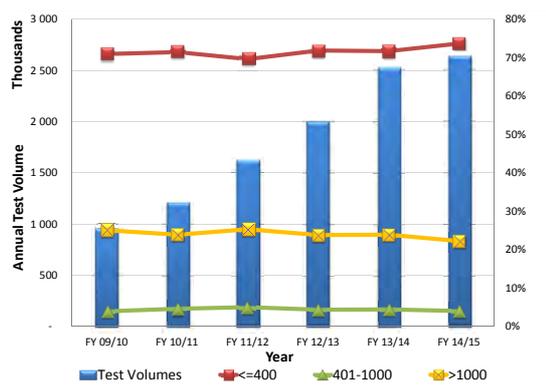
What else do we know?

- Most will reach VS, although risk remains significant in first 3 years after which major decrease
- For both first and second line VF: intensive adherence leads to high rates of re-suppression
- Failure to achieve CD4 recovery not as common as previously thought, although worse in Low CD4s at ART initiation: can increase up to 7 years post-initiation
- In children: age of control (VS) determines proviral load
- During pregnancy, if VS achieved and maintained at labour transmission risk >ly reduced (transmission can occur and usually associated with non-adherence episode)

Why treatment adherence and compliance: I

- **Underpins a successful treatment program:**
 - ✓ Affects how well HIV treatment decrease the viral load
 - ✓ Increases TB cure and treatment success
 - ✓ Helps prevent drug resistance
- **Treatment adherence and compliance is everyone responsibility:**
 - ✓ Patients
 - ✓ Health Care Workers , Lay counselors, WBOTs, CCGs, CHW
 - ✓ Implementing partners
 - ✓ Civil Society Organizations

Definition of virological suppression



How far are we off the mark?

Table 1. Select treatment and monitoring indicators for VL scale-up using matched laboratory data

Country	Year of VL scale-up	Period pre- and post-VL scale-up	Cumulative number of ART patients	Number of ART patients with ≥ 1 VL test	Proportion of ART patients with ≥ 1 VL test	Proportion of VL tests with VL suppression				
South Africa	2014	2014 vs. 2015	2,609,275	2,951,159	1,878,927	2,119,890	72%	75%	75%	78%

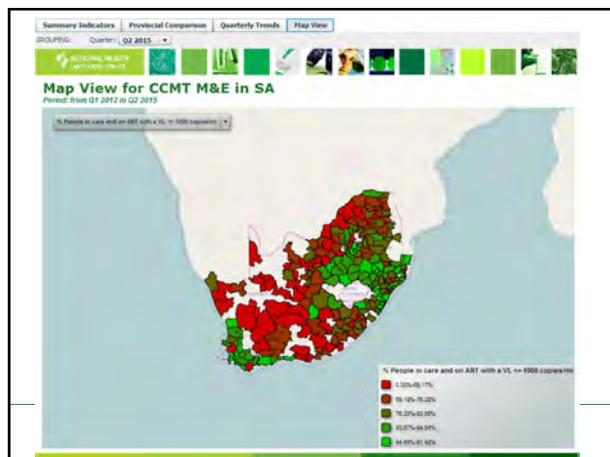
Numbers of VL tests were disaggregated at the individual level for adult and pediatric patients in South Africa

Massive geographic variation between districts sub-districts and facilities: 47-87%

Focused interventions needed

Last 20%: massive effort!!!!

Stevens, Deyde, Pillay, Macleod, Carmona; 2015



Guidelines: When to start ART?

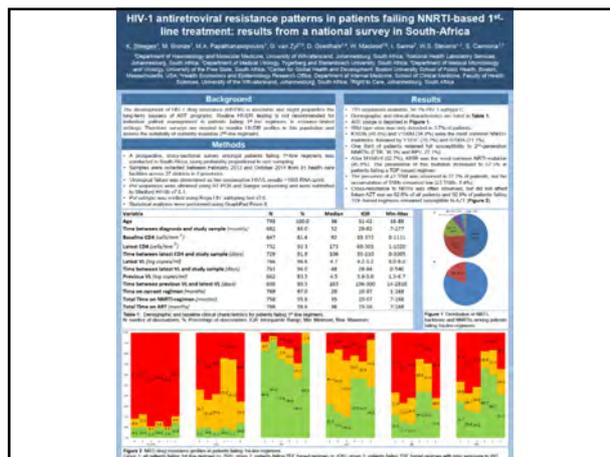
Evidence from 2 studies:

1. TEMPRANO ANRS 12136 (#2056 pts, Ivory Coast)
2. Strategic Timing of Antiretroviral Treatment (START) (#4685 pts, 215 sites, 35 countries)

Support early ART initiation -> demonstrate clinical benefits in asymptomatic patients at CD4+ >500 cells

- 144% lower risk of death or severe HIV-related illness
- 2 57% lower risk of death, a serious AIDS-related and non-AIDS related event in those Rx early vs Pt CD4 < 350
- Viral Suppression rate 80% & 95%
- Early ART reduced rate of TB
- NB: CD4 > 500 still reported AIDS related conditions

The TEMPRANO ANRS 12136 Study Group. A trial of early antiretroviral and isoniazid preventive therapy in Africa. *N Engl J Med*. DOI: 10.1056/NEJM1207160
The START Study Group. Initiation of antiretroviral therapy in early asymptomatic HIV infection. *N Engl J Med*. DOI: 10.1056/NEJM1308119



Message 2

- Guidelines and acceleration have major impact on labs:
 - Volumes
 - Choice of equipment
 - Operational plan
 - A strong R & D base required
- Addressing access, quality, science-based

Trends in clinical practice have major implications for national laboratory services

Clinical drivers

- Massive scale-up required; **additional 2.4 million**; de-centralised care
- **Rapid tests** have a more important role to play in treatment initiation and alternative approaches being considered: self-testing, opt out implementation, more convenient sites
- **Universal screening of TB to accompany all HCT; and the reverse**
- Initiation without CD4 for a large number of patients: pregnant women, TB patients, children <5, sero-discordant couples
- Lifelong treatment for pregnant mothers
- Treatment simplification: FDC drugs and massive price reductions
- CD4 : Gatekeeper for initiation, cryptococcal meningitis, TB urinary LAM?
- **Viral load more important in measuring treatment success**
- **The need for routine HIV drug resistant testing (2nd line)**
- ARV treatment as prevention, or Test and Treat: New drugs

Technology drivers

- Move towards same technology able to test for HIV and TB
- Catalyzation of POC assays for HIV and TB
- Analyzers with Massive automation
- highly sensitive assays; earlier diagnosis
- Improvement in DBS results for VL and EID
- Random access and multiplexing
- Continuous quality monitoring

Improved laboratory data collection tools

- Integration and co-ordination, e-Health and m-Health solutions
- Need for BIG data collection: e.g. Next gen Sequencing
- Integration to clinical data with a unique number is essential

SA NHLS NPP HIV VL Laboratory footprint to perform -3million VL.

Relevant services will need expansion

1. Centralised high-throughput systems (constrained by specimen transport logistics and integrity)
 - Whole blood 6hrs @ 15°C - 37°C
 - Plasma (centrifugation) 24hrs @ 37°C to 5yrs @ -70°C (storage) < PPT tube
2. Decentralized lower-throughput testing platforms.
 - Extend service through sample integrity = DBS (1-2 weeks 37°C to 1 yr @ -70°C (storage).
 - Increases access to testing and reduce TAT = (POC).

HIV viral load labs
16 laboratories
3 sites with Abbott m2000 system
12 sites with Cobas 8800/6800
Current instrument capacity (8 hour shift)
~ 1000 HIV VL / 8hrs

AS IS: Largely centralized PCR (HIV), CD4, TB (GeneXpert) laboratory footprint (total: 265)

CD4 labs
The NHLS enumerates CD4 for the public sector at 62 labs – current footprint for >3.8m test. Beckman Coulter, PLG CD4

HIV viral load labs
17 laboratories
8 sites with Abbott m2000 system
9 sites with Roche CAP/CTM
Current instrument capacity (8 hour shift)
50: 50 supplier test split

GeneXpert TB testing labs
National policy
Roll out March 2011, testing at smear microscopy labs
>6.5million tests to date.
Gx at POC:NTCM—too costly

Testing centres: 221
Analysers: 389
Clinic placements: 20
Gx4: 110
Gx16: 190
GX80-48: 1
GX8:7

Consolidation

Anticipated extra 6-800 000 VL Further consolidation as logistics are improved & platform changes

Why are Laboratory Services for HIV difficult to manage in South Africa?

CD4 volumes and test ranges: ~3.9 million tests/year

Period	<= 50	> 50 <= 100	> 100 <= 200	> 200 <= 350	> 350 <= 500	> 500	Total
Feb 2014 - Jan 2015	191 152	169 833	407 323	817 068	878 700	1 442 418	3 906 494
Feb 2013 - Jan 2014	192 661	175 675	425 459	851 559	883 173	1 353 629	3 882 156

Viral load volumes and test ranges: ~2.8 million tests/year

Period	<=1000	>1000	Total	%<=1000
Feb 2014 - Jan 2015	2 205 437	630 808	2 836 245	77.76
Feb 2013 - Jan 2014	1 834 593	585 649	2 420 242	75.80

EID volumes and test ranges: ~360 000 tests/year

Period	Positive	Negative	Other	Total	% Positive
Feb 2014 - Jan 2015	13 510	344 053	658	358 220	3.77
Feb 2013 - Jan 2014	14 076	327 822	3	342 634	4.11

Significant scale-up is needed: NDoH investment case for 2015: -3.5 million 20120: 6.5-7 million

Monthly Data Reports- HIV

CD4 volumes and test ranges: ~3.8 million tests/year

Period	<=350	>350	Total	% <=350
August 2014 - July 2015	1 523 906	2 257 292	3 781 198	40.30
August 2013 - July 2014	1 610 848	2 288 088	3 898 936	41.32

Viral load volumes and test ranges: ~3.1 million tests/year

Period	<=1000	>1000	Total	%<=1000
August 2014 - July 2015	2 473 163	667 777	3 140 940	78.74
August 2013 - July 2014	2 051 142	613 679	2 664 821	76.97

EID volumes and test ranges: ~400 000 tests/year

Period	Positive	Negative	Other	Total	% Positive
August 2014 - July 2015	15 090	384 615	1 145	400 878	3.76
August 2013 - July 2014	13 073	332 563	32	346 330	3.77

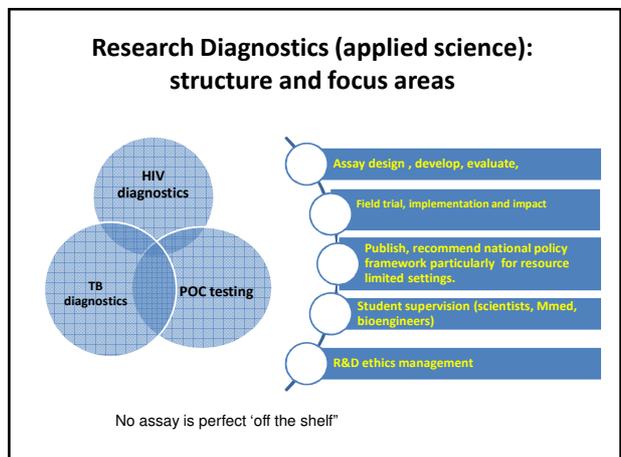
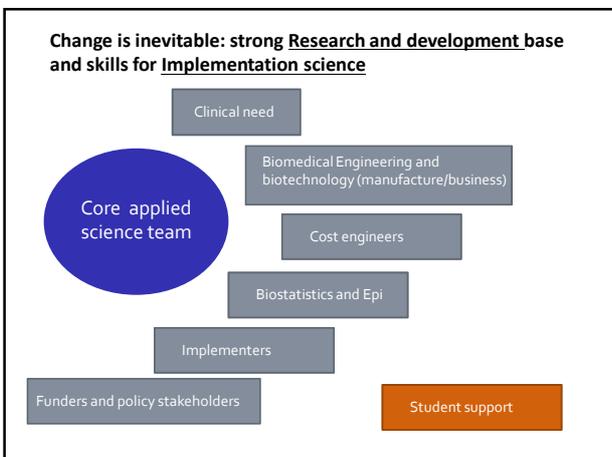
Features:

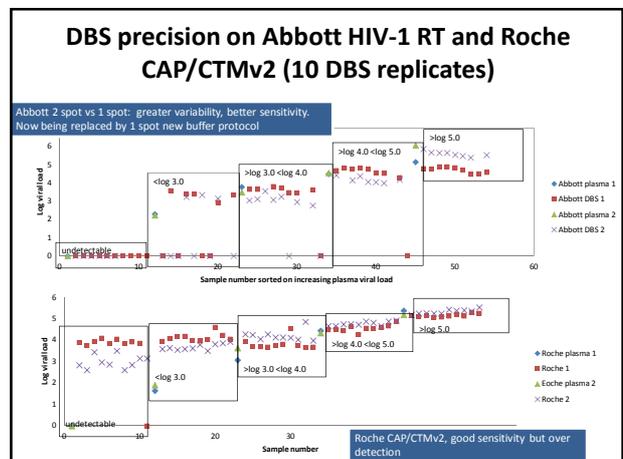
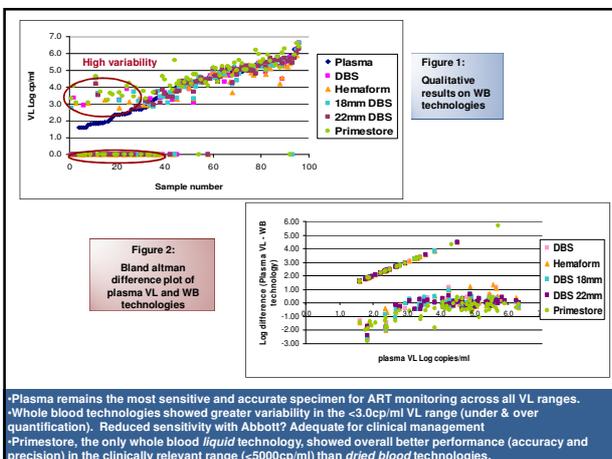
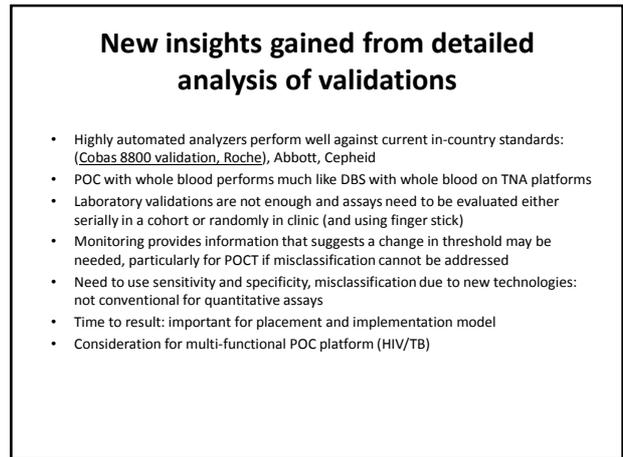
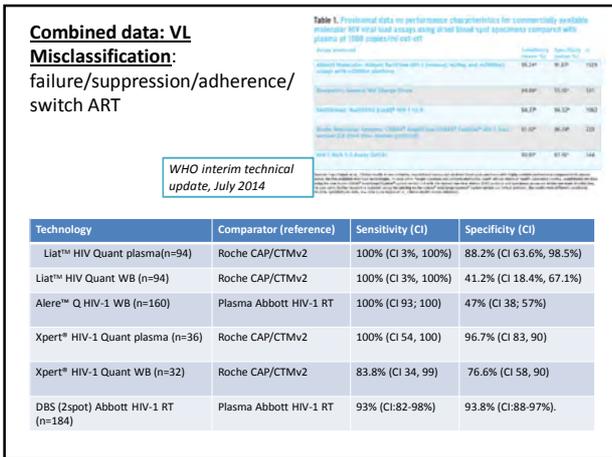
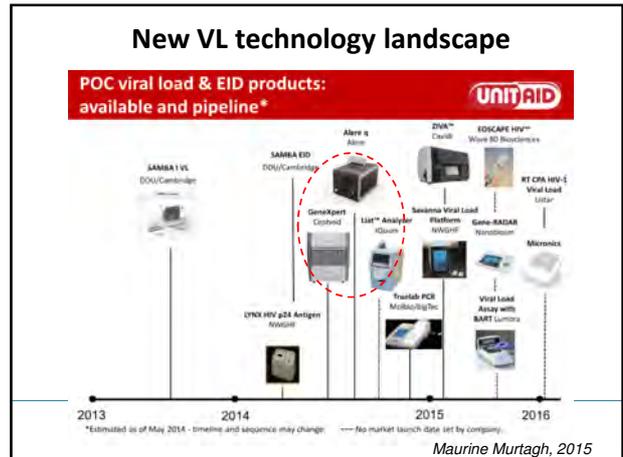
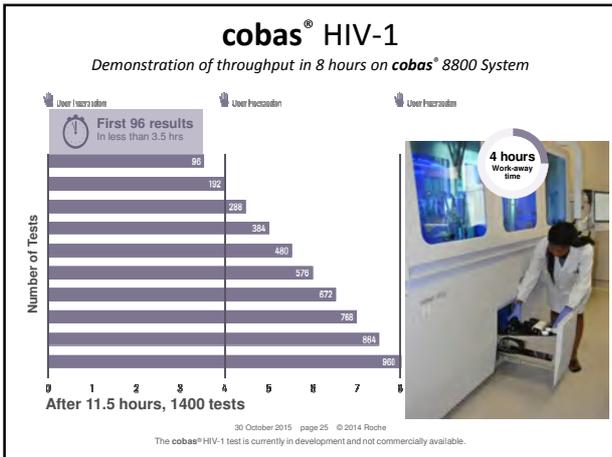
- Provincial summary
- Month on month summary
- District summary
- Test volume trends

Significant scale-up is needed: NDoH investment case for 2015: -3.5 million 20120: 6.5-7 million

Critical choices
Available options (lab extension, lab replacement, lab multifunctional, clinic based service)

Laboratory based testing	Opportunity	Clinic based testing using POC
Extend existing plasma services	<ul style="list-style-type: none"> • Ultra high throughput (Roche 8800 or equivalent) • Decentralised (Cepheid) • PPT 	<ul style="list-style-type: none"> Space, operators, connectivity! Time to reportable result (35mins – 90mins) Threshold change: on-site adherence vs clinic workflow disruption Single or multiple assays
Replace/extend existing service through alternative matrices	<ul style="list-style-type: none"> • DBS on existing platforms using existing logistics 	
Multi-functional	<ul style="list-style-type: none"> • HIV/TB (Cepheid, Roche, Abbott etc) 	<p>Options</p> <ul style="list-style-type: none"> Diagnosis vs monitoring (whole blood/DBS): TNA selection vs RNA Plasma vs whole blood with threshold change





Message 3

- Result access: SMS
- Clinical Laboratory Interface
- Laboratory-based linkage to care
 - data dashboard
 - mHealth: MDR
- mHealth Hub
- m4JAM

Addressing: Disaggregated data, accountability, linkage, COMMUNITY-BASED task shifting, compensation

The clinical laboratory interface

Result reporting:

- Instruments need standard communication protocol.
- When used at the POC, middleware software to be installed to link to LIS.
- Data all transferred to Central Data warehouse for interrogation – M&E.

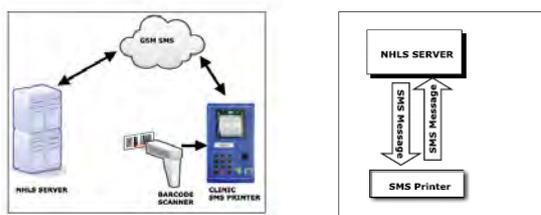
Monitoring instrument performance:

- Need ongoing real time monitoring of instrument performance: error rates, invalids, calibration issues, user issues, throughput.

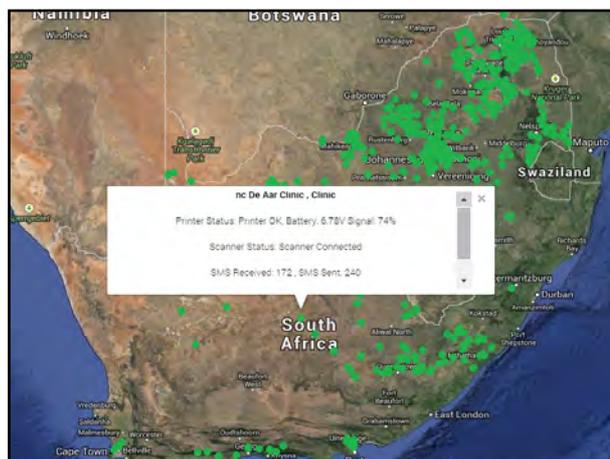
Solutions:

- remote connectivity system (software as a service [SaaS]): Low cost, no hardware investment, concerns with data security (cloud).

Bi-Directional SMS Printer



HIV / TB RESULTS PRINT IMMEDIATELY WHEN AUTHORISED
HEALTH CARE WORKER/CLINICIAN QUERY RESULTS ON DEMAND USING NHLS PATIENT BARCODE (REQUEST FORM)



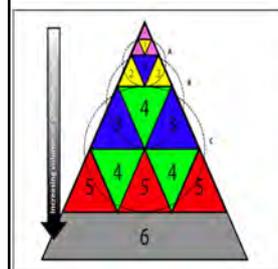
Models for POCT implementation in SA

Appropriate, controlled placement is required

- 1. Total Coverage model:** where DBS and Point of Care added to ensure complete coverage of laboratory services in a tiered laboratory service, focussing on remote, low volume sites
Equipment selection: based on volumes, compatibility with larger systems
- 2. Point of Treatment (total decentralized)**
 - Disease specific e.g. HIV treatment initiation, TB diagnosis, diagnosis of diarrhoea, non-communicable e.g. glucose, HbA1c
 - Assay specific e.g. Hb, or GeneXpert, cryptococcal antigen or POC CD4 for wellness testing
 - Not affordable
- 3. Product Niching**
 - Accreditation of sites: staff, quality and connectivity
 - Product niching (Viral load)

Stevens, W, Gaus, N, Scott, L.E. Feasibility of HIV POCT for RLS: Challenges and solutions. BMC, 2014. Stevens, W, et al. POCT: Policy document for SA. NDoH, NHLS and partners collaborative forum. Pretoria, July 2013

ITSDM Service Model



Developed the Integrated Tiered Service Delivery Model (ITSDM): (Red=additional tiers vs. black=existing tiers):

- **Tier 1: True POC:** Delivers CD4 testing at single health-clinics providing ART in hard-to-reach, remote areas (<5 samples/day)
- **Tier 2: POC Hub:** Laboratory-based testing or CHC sites processing 30–40 CD4 samples/day), consolidating POCT across 8–10 health-clinics with other HIV-related testing.
- **Tier 3: Community Laboratory:** serving +40 health-clinics, processing <150 samples/day
- **Tier 4: District Laboratory:** Serving +100 facilities and process <350 samples/day
- **Tier 5: Metro/Centralised Laboratory:** High volume laboratories (>350 <=1500 tests/day, serving +200 health-clinics)
- **Tier 6:** Coordinated national support for standardisation, harmonization and quality across services (NPP).

Innovative Placements for POC

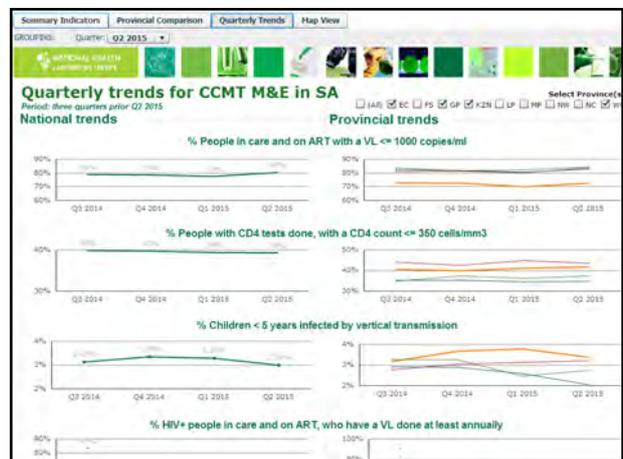
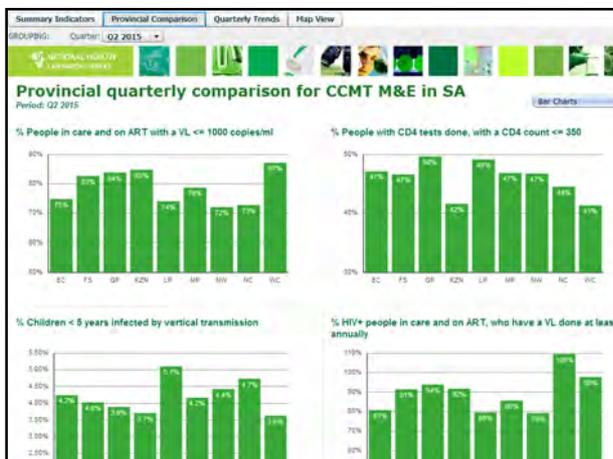
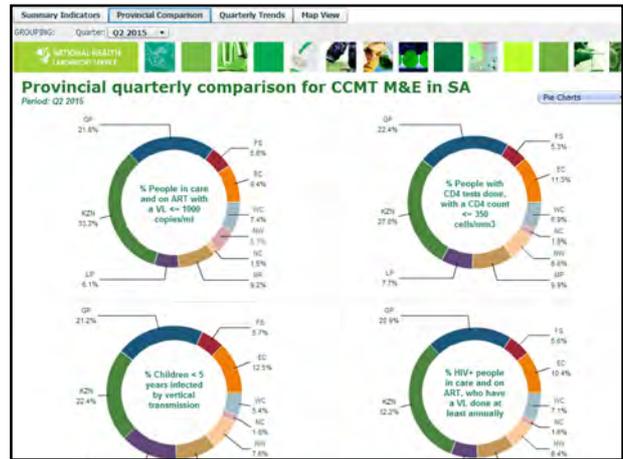
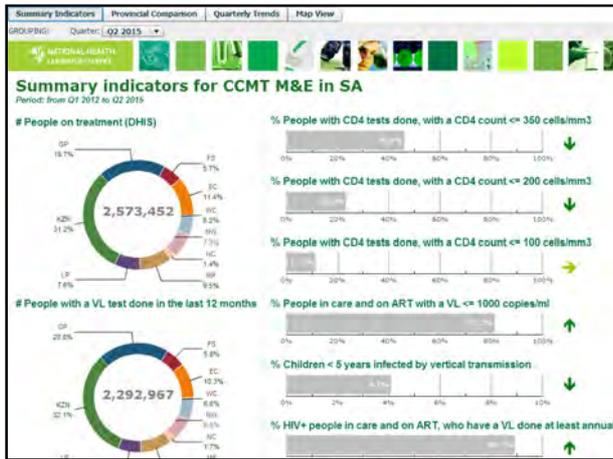
Service	Unit Price
CD4 Count	R 1.00
CD4 Count + VL	R 1.50
CD4 Count + VL + HIV-1 RNA	R 2.00
CD4 Count + VL + HIV-1 RNA + TB	R 2.50
CD4 Count + VL + HIV-1 RNA + TB + Syphilis	R 3.00
CD4 Count + VL + HIV-1 RNA + TB + Syphilis + Hepatitis B	R 3.50
CD4 Count + VL + HIV-1 RNA + TB + Syphilis + Hepatitis B + Hepatitis C	R 4.00
CD4 Count + VL + HIV-1 RNA + TB + Syphilis + Hepatitis B + Hepatitis C + Malaria	R 4.50

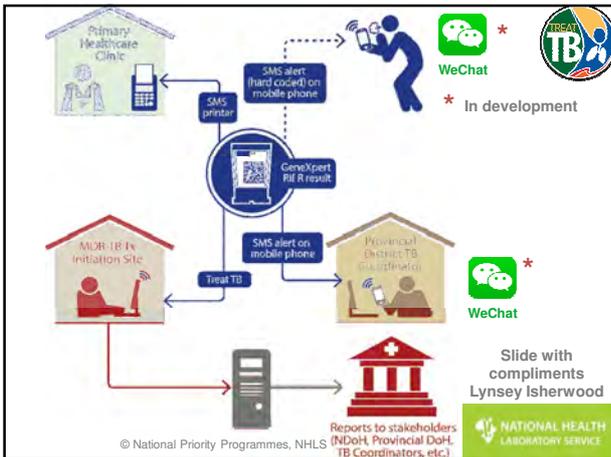
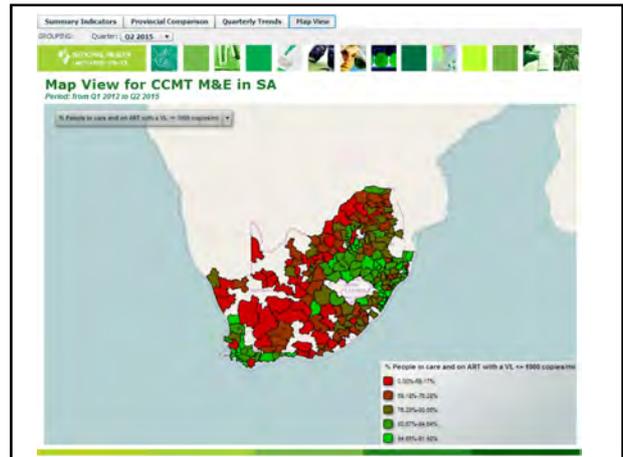
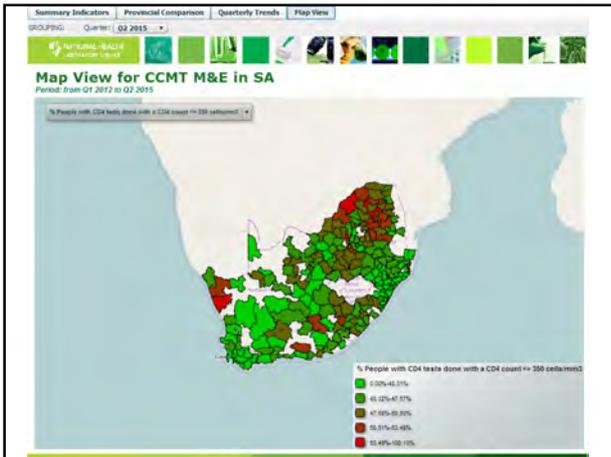
VM Center 50 800W LABS
CD4 Counting Unit
MMP + VLMP + VLMP +
Grandpart Investment case 2009 performance
December 2009

Laboratory approach to Linkage to care and improved adherence

Data collection/analysis focuses on surveillance and not patient care

Intervention	Solution	feasibility	Needs
Data Centralization	CDW, NHLS, BIG DATA	In place for all assays performed	Maintenance costs high Skilled staff
Data Dashboard	Needs assessment Progress monitoring Real-time accountability	Developed Probabilistic matching Ready for launch	Maintenance costs high Skilled staff Unique identifier Security levels defined
mHealth Hub	Public-private partnerships Service all apps consolidation	In progress for 4 pilots for MDR Forum established multiple partners and feasibility Result push out into any platform	Funding for Hub development and maintenance
Enormous training needs	Partner collaboration	RTC model	Participation by PEPFAR partners e.g. simple messaging; VL>1000: what do you do?





Province: GAUTENG		
Mandatory Field	% Compliance	% Non Compliance
Age	94%	6%
Gender	97%	3%
Hospital Id	96%	4%
HPCSA/DR Name	90%	10%
National Id	4%	96%
Patient Name	100%	0%
Patient Surname	100%	0%
Ward	100%	0%

Account: 322BAR00001:CHRIS HANI BARAGWANATH HOSPITAL GAUTENG			
Location Name	Mandatory Field	% Compliance	% Non Compliance
Chris Hani Baragwanath Hosp	Age	87%	13%
Chris Hani Baragwanath Hosp	Gender	96%	4%
Chris Hani Baragwanath Hosp	Hospital Id	100%	0%
Chris Hani Baragwanath Hosp	HPCSA/DR Name	98%	2%
Chris Hani Baragwanath Hosp	National Id	0%	100%
Chris Hani Baragwanath Hosp	Patient Name	100%	0%
Chris Hani Baragwanath Hosp	Patient Surname	100%	0%
Chris Hani Baragwanath Hosp	Ward	98%	2%

Digital Health Captains of Industry
The Future of Healthcare
MDR-TB Partnership

MDR-TB | Goal

90% of people with suspicion of MDR-TB
90% of people with suspicion of MDR-TB
90% of people with suspicion of MDR-TB

MDR-TB | Objective
"Improvement in identifying and curing drug-susceptible TB and early detection and effective treatment of all MDR-TB cases (reduce time from suspicion to starting standard second-line treatment – five working days)"

Digital Health Captains of Industry

MDR-TB | Pilot Location

MDR-TB | Solution

1. Suspect tests for TB at PHC clinic and enroll in emocha
2. Lab results appear on tablet in real time; Linkage status visualized
3. Linkage officer contacts suspects who are MDR-TB positive
4. Patient checks-in to MDR-TB clinic

Digital Health Captains of Industry

MDR-TB Status of enrolled patients:

Category	Count
TB (104/104)	104
MDR-TB (12/12)	12
Non-TB (1/1)	1

Region	Month	Count
MURCHISON	MAR	50
	APR	200
	MAY	314
	JUN	272
	JUL	234
KWA MBONDE	MAR	10
	APR	100
	MAY	100
	JUN	124
	JUL	95
GAMLARIWE	MAR	100
	APR	300
	MAY	302
	JUN	281
	JUL	280

21 RISK PATIENTS | TB LINKED TO CARE | AVERAGE TIME: 72 HOURS

Digital Health Captains of Industry

MDR-TB | National Roll Out

20+ CLINICS BY NOVEMBER 2015

1. UGU
2. ETHEKWINI
3. NELSON MANDELA BAY METRO
4. BUFFALO CITY METRO

PHASE I

Strategic Expansion "Epicenters"
Aug - Nov 2015

PHASE II

Rapid Expansion "Satellites"
Nov 2015 - Mar 2016

Digital Health Captains of Industry

M4JAM for Health

Driving healthy behaviours one micro job at a time

Rewarding individuals who perform positive behaviors is a growing area of study in development economics and can be delivered via M4JAM.

- M4JAM provides government with a mobile platform to **proactively encourage preventative health behaviours**, as opposed to reactively funding treatment which is prohibitively expensive
- Rewarding citizens who perform small health related tasks will, over time, **change behaviours, improve their health indicators**, via financial empowerment as well as theoretical and practical health related behaviours.
- Budget cost control: revolutionary way to **track spend from sponsorship through to delivery via a risk free Pay-As-You-Use model** where individuals must prove micro-task completion before funds are released to their M4JAM Wallet
- **Real time monitoring** via a centrally managed

Mohau sent #M4JAM this message, when asked what he will do with the cash, he responded saying it would go to pay off his student loan.

Digital Health Captains of Industry

Primary Aim

The primary aim of the 'mHealth HUB' is to provide a centralised near 'real-time' monitoring dashboard, together with a standardised reporting framework of mHealth data, that can facilitate and co-ordinate various requests that are being made of our group and the NDoH. The ultimate goal is to link as many patients to care as possible and to provide monitoring and reporting to various levels of the healthcare system.

... aligned with newly published NDoH mHealth Strategy Document: 2015-2019

Digital Health Captains of Industry

National Priority Programmes mHealth HUB Architecture

HEALTHSHARE mHub

STANDARDS BASED INTEROPERABILITY CONNECTORS (IHE, HL7, SDAP, FTP, Email, SMS, File, FHIR, JSON, REST etc...)

HealthShare Foundation ESB (Cache, Ensemble, HL7, IHE)

O/S, Hardware, Storage, Network

Digital Health Captains of Industry



Social upliftment

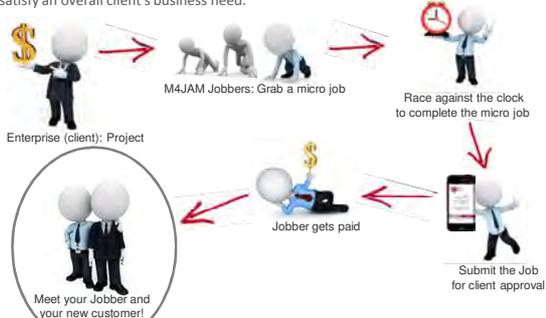
EASY WORK . EASY MONEY

November 2014

www.m4jam.com

High Level Flow

Many jobbers using M4JAM aim to complete micro jobs to earn money and in-turn satisfy an overall client's business need.



Enterprise (client): Project

M4JAM Jobbers: Grab a micro job

Race against the clock to complete the micro job

Submit the Job for client approval

Jobber gets paid

Meet your Jobber and your new customer!

M-Health job types

Engaging with the crowd to scale health services



- Opportunity to earn additional income by using a cell phone.
- Gather behavioral insights nationally, with the ability to segment the insight by location.
- Monitor & respond to service delivery real time, at a clinic level.
- Encourage positive health behaviours (HIV testing, CD4 count, viral loads)
- Empower citizens to become health savvy through micro-education
- Monitor & respond real time to the number of people using facilities across the country.

Job Categories

Category	Job description	Output for client	Rand Price Per Job
Category 1	A maximum of 10 simple questions to be performed by the jobber, the questions excludes photos, all content downloads, GPS geo tag validation and is non-location specific. The company will receive a maximum of one ID number per job and the job must take no longer than 10 minutes to complete.	10 answers to questions	R25.00 ex VAT
Category 2	A maximum of 9 simple questions/tasks to be performed by the jobber and a GPS geo tag validation, the questions/tasks excludes photos and all content downloads. The company will receive a maximum of one ID number per job and the job must take no longer than 10 minutes to complete.	Category 1 data plus GPS Validation (Device location validation)	R35.00 ex VAT
Category 3	A maximum of 8 simple questions/tasks to be performed by the jobber and a GPS geo tag validation, up to 2 photos or alternatively a multimedia or applications download. The company will receive a maximum of one ID number per job and the job must take no longer than 10 minutes to complete.	Category 2 data plus: • Photo (max 2 photos per job) • Or application download • Or video file upload (max of 10 seconds) • Or multimedia download	R45.00 ex VAT
Category 4	A combination of photos, geo tags or content downloads and multiple jobber details per job.	All within the M4JAM official account Agreed between M4JAM and Agency	Price to be agreed between the parties.

Note: Job volume is limited to a maximum of 50 000 and a minimum of 1 000 jobs per campaign

Fast, Targeted Insights



Data types:

- Survey answers based on the audience's opinion as well as feedback based on their associated environment
- Photograph/s of point of interest items
- Location of point of interest items
- Time and date of the job
- Aggregated according to client specification (age, geo location, gender)

Targeting options:

- By location: geo-fence a particular area that you would like responses from
- By age band
- By gender
- By ID
- Building up data density on a known end consumer by targeting specific individuals in micro-job 2, 3, 4 etc.

The Client

Simply confirm a batch of micro tasks, fund your project and M4JAM will post the micro jobs on your behalf. We send you the completed work package for your approval, including the following information about the jobber completing the task:

- Name
- ID Number
- Contact number
- Contact email

Accepting and completing the micro job is the primary goal and as part of the work acceptance the successful jobber authorizes the CLIENT to gain access to above personal information.





Opportunities



Game Changer	Context	Benefits
Healthcare	"Among patients in intervention clinics who received the voucher (incentive) at least once, treatment success rates were significantly improved" – BioMed Central: Economic support to improve tuberculosis treatment outcomes in South Africa (May 2013)	<ul style="list-style-type: none"> • A community that embraces preventative medical is less expensive to service than a community that is on reactive healthcare. • Reference Chinese approach to Healthcare since 2006
Poverty Alleviation	"Businesses need to change the way they operate if they are going to have a chance at addressing the issues that face the world, doing good really is good for business, requires innovative people, new business models" – Richard Branson	<ul style="list-style-type: none"> • Economic stimulus and community upliftment in RSA. • Poverty alleviation in communities of need. • Driving a shift in culture shift in RSA will help drive the economic change needed in RSA to address a large number of the social issues that the country is facing. • Reference Paraguay Poverty Reduction Case Study
Education	"Technology is disrupting education, expanding the education ecosystem beyond traditional lecture halls and classrooms to accommodate learners' preferences for time, place, style and previous levels of attainment." – Gartner Predictions 2013: Digitalization Powers Education	<ul style="list-style-type: none"> • Economic stimulus and community upliftment in RSA. • Higher levels of education in RSA creating greater employability.

- ### Acknowledgements
- NDoH: Drs Pillay, Panini
 - NPP staff: Drs Carmona, Glencross, Berrie
 - VL team of NPP: Carmona
 - HERO; Bill Macleod, Meyer Rath
 - NHLS mHealth hub team
 - John Hopkins: Jason farley & team
 - RTC: Professor Sanne
 - CDC: Dr. Deyde
 - M4JAM