



# SOUTH AFRICA

HIV Epidemic, Response  
and Policy Synthesis

*April 2011*

**SOUTH AFRICA**  
**HIV Epidemic, Response and Policy Synthesis**

**Getting to Success:  
Improving HIV Prevention Efforts  
in South Africa**

**Final Draft Report**

**31 May 2011**

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This Synthesis Report on how to improve South Africa's HIV prevention response is based on the following reports produced as inputs to this Report:

- USAID-HPI policy review report
- HIV Epidemiological review report
- MoT modelling report
- HSRC KYR review report
- Media content analysis

## **Foreword**

South Africa has gone beyond the crossroads in addressing HIV: the Government has committed itself to acting with courage, boldness and decisiveness in combating the greatest health challenge that this country has ever had to face. On the eve of the development of the country's new national HIV strategy, it is paramount that we choose wisely.

This report is the culmination of four separate studies commissioned to better understand South Africa's HIV response and delineate the current prevention spending in the country. It makes bold recommendations for changing the course of the HIV epidemic in South Africa, and for decimating the tap of new infections in the country. If implemented, these recommendations could set South Africa on a path to success and victory, enabling us to use the scarce resources available to support persons living with HIV.

The Government would like to thank all the organisations and individuals that have been involved in this effort for the guidance, inputs and technical support through the various components of the study: UNAIDS, The World Bank, Human Science Research Council, Health and Development Africa, Centre for the Governance of AIDS in Africa and the South African Centre of Epidemiological Modelling and Analysis.

To stem the tide of new infections, new solutions are needed, as well as the boldness and courage to choose wisely, implement prudently, monitor the quality fiercely and determine the impact of our HIV prevention efforts.

### **Minister of Health**

Government of the Republic of South Africa

## SECTION 1.

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# INTRODUCTION

The purpose of this work is to assist South Africa in improving its HIV prevention response. In 2011, the South African government has the challenging task to draw up a new 5-year strategy: the **National HIV Strategic Plan 2012 to 2016**. This plan is to provide strategic direction on how to respond to HIV and AIDS in South Africa in the next five years. With the annual rate of new HIV infections down to the level of the early 1990s, a slower spread of HIV infection in teenagers, ARV provision at high levels, and promising new HIV prevention tools becoming available, these five years represent a **window of opportunity** to radically turn around the epidemic by significantly putting the brakes on new infections in the country. By virtually halting new infections in South Africa, the country can focus on providing universal access to HIV care and support services for all persons already living with HIV.

**Focusing on HIV prevention is not new for South Africa and some successes over the past decade have been evident.** The current South African National Strategic Plan for HIV and AIDS and STIs (NSP) 2007 to 2011 has as its primary prevention goal to reduce the national HIV incidence rate by 50% by 2011. A mid-term review (MTR) of HIV response efforts under the ambit of this plan late in 2009 showed out that South Africa has made significant progress in scaling up some key interventions (MTR report, SANAC 2010). The MTR also confirmed that more data about the HIV epidemic are available and more organizations are now providing HIV prevention services than ever before: There has been a fast accumulation of data on HIV prevalence, HIV incidence and biological, behavioural and societal co-factors of the epidemic. In some South African settings like Umkhanyakude district in KwaZulu-Natal, the Umtata area in Eastern Cape, and Bohlabela District (formerly Bushbuckridge) in Limpopo Province, there is a remarkable body of data available on the HIV epidemic's multi-faceted effects and the risk factors that continues to drive new infections. Also, in South Africa today, there is significant knowledge of how to implement both biomedical and behavioural HIV prevention interventions – but have these been the right interventions? And have they worked to achieve their ultimate purpose of averting new infections? How much did it cost to avert these new infections? Some data on the impact and costs of these interventions are emerging, but significant gaps in HIV prevention knowledge remain. As the MTR highlighted, shortfalls in South Africa's response to HIV prevention remain: a lack of systematic measurement; poor understanding of programme effectiveness and impact; inadequate knowledge of both service need and provision; and the lack of an annual coordinated national and provincial planning process focusing on identified priorities.

**But despite some gains in HIV prevention, South Africa is still grappling with a HIV and resultant TB epidemic of enormous and growing scale.** The country is home to the world's largest population of people living with HIV (PLHIV): approximately 5.6 million in 2009 (UNAIDS, 2010) – one of every six PLHIV in the world live in South Africa. The new ASSA2008 model estimate is in line with this: *about 5.5 million HIV-positive South Africans in 2010, and around 10.9% of the South African population aged 15 and older is HIV positive* (ASSA, 2011). The epidemic is estimated to have reduced life expectancy of South Africans by about 13 years, from 64 years in 1990 to 51 years in 2005. Furthermore, South Africa's tuberculosis (TB) epidemic is the fifth most severe in the world – the TB burden almost doubled between 2001 and 2006 with an estimated 55% of cases co-infected with HIV. The HIV epidemic is severely hampering South Africa's ability to achieve several MDGs, including the target of halting and reversing the spread of HIV and TB by 2015. Furthermore, the future evolution of South Africa's epidemic will to a large extent influence the chances to achieve the goals set globally for 2015 - the reduction of sexual transmission by half and the elimination of vertical transmission (UNAIDS strategy, 2010) - since South Africa's epidemic weighs in so heavily in the global total.

**Since the last NSP was developed, an estimated 1.5 million new HIV infections occurred in South Africa, and an estimated 2 million people died of AIDS-related causes** (Spectrum estimates and projection). Further escalation of the epidemic will increase the dire consequences. The epidemic had and continues to have large-scale devastating effects on human development. HIV prevention needs to be ramped up, informed by the data on the key epidemic drivers, the biological and behavioural risk factors, and the sources of new infections.

**The only way to get ahead of the HIV epidemic in the long term is to rapidly intensify HIV prevention efforts so as to virtually halt all new infections.** Although the South African HIV epidemic has stabilised over the last decade, the number of new infections every year continue to outstrip the number of AIDS-related deaths: although this is encouraging and important news from a treatment, quality of life and life expectancy perspective, it does imply that the total pool of PLHIV in the country keeps growing, with more people living with HIV and able to infect others. There is therefore an urgent need to better focus the national response on the prevention of new HIV infections.

In order to inform the new NSP, this synthesis process was embarked on, lead by the South African Government, and supported by UNAIDS, the World Bank, and a group of South African service providers (HSRC, HDA, SACEMA, CEGAA<sup>1</sup>). The process entailed synthesizing all the data about the HIV epidemic in South Africa -- "**Knowing Your Epidemic**" (KYE) that was a review of the available data on the epidemiology of prevalent and incident HIV infections and the wider epidemic context of these infections – and "**Knowing Your Response**" (KYR), which was a review of HIV prevention policies, programmes and expenditure for HIV prevention. The KYE-KYR process which involves desk review of published and unpublished data and reports, and secondary analysis of key biological and behavioural data to create an in-depth understanding of the situation. Data on epidemic drivers, implemented programmes, policies, expenditures and programme effectiveness are linked in a structured way in order to identify mismatches, gaps and missed opportunities. The interpretation of these findings is informed by global, national and regional research evidence, knowledge, experiences and evidence of "what works" in HIV prevention.

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<sup>1</sup> HSRC (Human Science Research Council), HDA (Health and Development Africa), SACEMA (South African Centre of Epidemiological Modeling and Analysis), and CEGAA (Centre for the Economics and Governance of AIDS in Africa)

## SECTION 2.

### HIV PREVENTION CHALLENGES IN SOUTH AFRICA

**The first and foremost challenge is the size and nature of the South African HIV epidemic.**

The HIV “epidemic” of the 1990s – a disease outbreak of *unexpectedly* high occurrence – has become “endemic”. In other words, the unexpectedly quick rise of new HIV infection in the country has settled at a high level, where there are significant numbers of persons living with HIV (17% of adults aged 15 – 49 according to a national survey in 2008). Because of the high levels of HIV infection in the country, South Africa’s HIV epidemic is now said to be a *hyperendemic* epidemic.

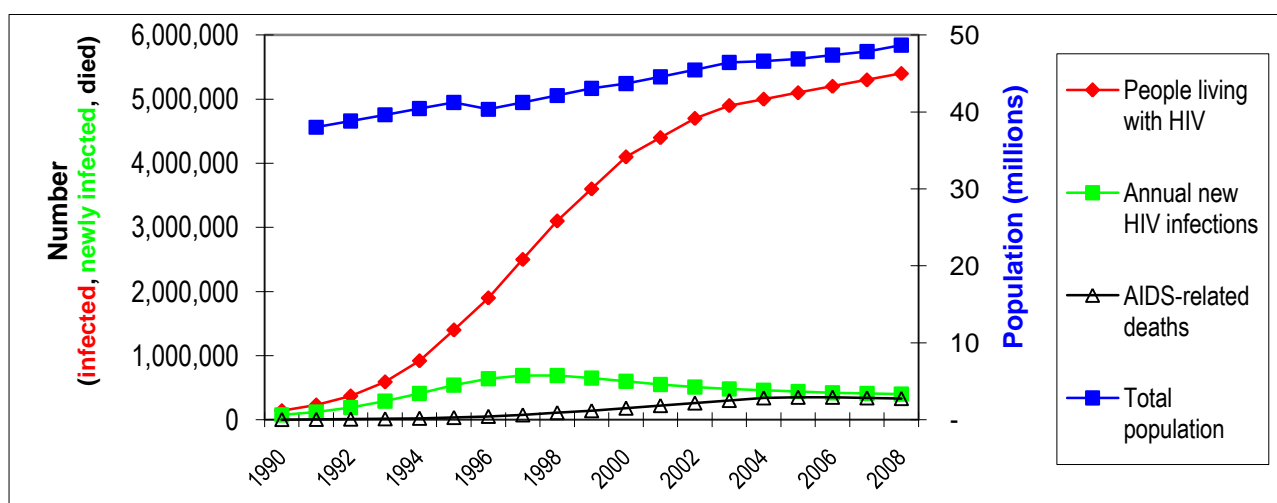
Such ‘mature’ epidemics characterised by large numbers of persons already infected and continuing new infections, require a long-term sustainable response of large scale to bring about change, as opposed to a short-term, emergency response – because in reality the HIV prevalence in this context is not going to reduce dramatically in the near future, even if new infections were almost entirely halted.

Epidemiological projections from the *aids2031* initiative reinforce the view of an endemic HIV situation in South Africa, which makes a complete reversal in the foreseeable future extremely difficult, if not impossible.

**Second, the absolute burden of disease relating to HIV in South Africa is growing.** The long-term monitoring system of HIV surveillance in pregnant women confirms that South Africa’s HIV hyperendemic growing. Since 2004, the HIV prevalence amongst pregnant women has consistently been above 29% (data up to 2009 ANC survey). Although the national HIV prevalence (*percent* of population HIV+) has recently stabilised, the *absolute number* of PLHIV is on a steep increase of approximately 100,000 additional PLHIV each year due to the combined effect of new infections, population growth and the life-prolonging effect of antiretroviral treatment (ART).

According to the new ASSA 2008 model estimates, for example, there is a substantial downturn in AIDS-related mortality in recent years, with annual number of AIDS deaths reduced from about 257,000 in 2005 to about 194,000 in 2010 (ASSA, 2011). This is largely due to the expansion of the ART programme.<sup>2</sup> Figure 1 illustrates this combined effect of new infections, population growth and the prolonging effect of ART treatment on the total number of PLHIV in South Africa.

**Figure 1. Modelled absolute numbers of PLHIV, annual new infections, AIDS-related deaths and total population, adults aged 15-49 years, South Africa (1990-2008)**

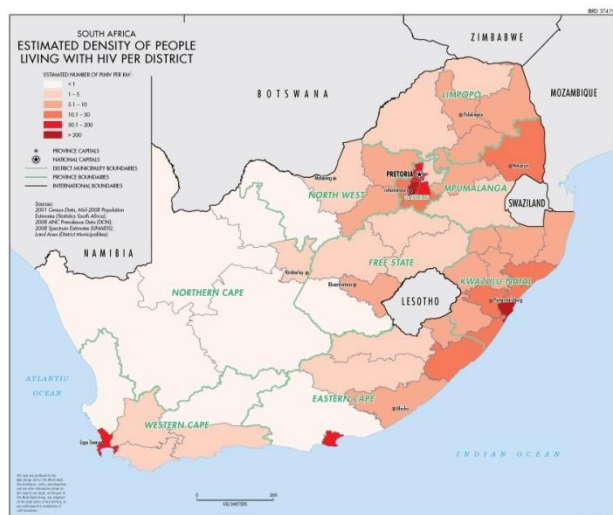


Sources: Spectrum estimates and mid-year population estimates from [www.statssa.gov.za](http://www.statssa.gov.za)

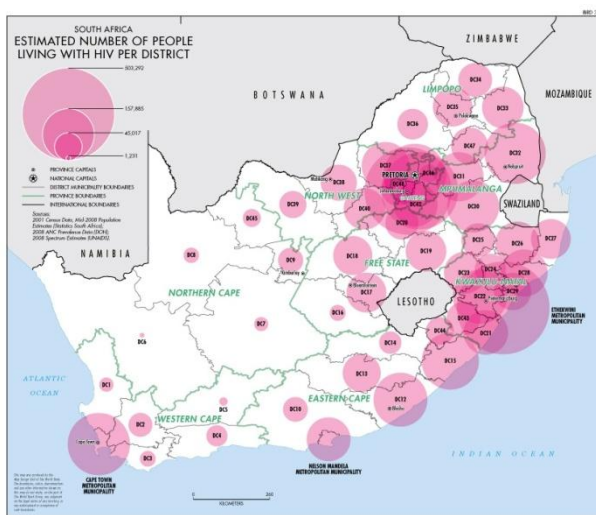
<sup>2</sup> The ASSA 2008 model also has revised assumptions about mortality rates in untreated HIV-infected individuals prompted by studies showing higher survival rates in African adults than had previously been assumed (ASSA, 2011).

**Third, HIV continues to spread heterogeneously across and within provinces, requiring different levels of effort in different locations.** The heterogeneity is confirmed by both HIV incidence and HIV prevalence data: The estimated number of annual new HIV infections in the provinces varies by up to a factor of 30;<sup>3</sup> Population HIV prevalence in the provinces varies between 3.8% and 15.8%<sup>4</sup>; Maternal HIV prevalence in the health districts ranges from 0% to 46.4%.<sup>5</sup> At district and metropolitan municipality level, estimations suggest vastly different numbers of resident PLHIV ranging from a low of about 1,200 to a high of over 500,000.<sup>6</sup> While the City of Johannesburg Metropolitan Municipality has about 270 resident PLHIV per square-kilometre, the Nelson Mandela Metropolitan Municipality has about 60 PLHIV. Comparing estimates between South Africa's districts shows that Sedibeng District has about 27 resident PLHIV per square-kilometre, while 9 districts have less than one PLHIV per square kilometre – Figure 2 illustrates this heterogeneity in the density of HIV prevalence across South Africa. Demographically, the percentage of rural population ranges from less than 10% in Gauteng and Western Cape to 87% in Limpopo (2001 census). These figures illustrate the extreme differences in local HIV burden and needs for AIDS-related care, as well as different challenges to physically reach out to people and geographically provide service access. The variations do however highlight the importance of assessing and responding to the individualized prevention needs of particular provinces and subpopulations.

**Figure 2. Maps of South Africa showing estimated density (left) and clustering (right) of people living with HIV**



**Sources:** 2001 census data, mid-2008 population estimates (Statistics SA), 2008 ANC HIV prevalence data (DOH), and 2008 Spectrum estimates (UNAIDS), Land area (District Municipalities)



**Sources:** 2001 census data, mid-2008 population estimates (Statistics SA), 2008 ANC HIV prevalence data (DOH), 2008 Spectrum estimates (UNAIDS)

**Fourth, whilst the reductions in HIV incidence in the last decade is notable (and expected),** the fact that the annual HIV incidence rate has been reducing might elicit a false sense of success and therefore result in complacency in relation to HIV prevention efforts. The annual HIV incidence rate has halved from a peak level of about 2.6% in 1997 to an estimated 1.2% in 2009 – Although 1.2% might seem insignificant, it translates into almost 400 000 new adult infections to

<sup>3</sup> 2009 EPP estimates, with the highest number of estimated new HIV infections in KwaZulu-Natal (100,787) and the lowest number in Northern Cape (3,177) – by Gouws (2010).

<sup>4</sup> Western Cape and KwaZulu-Natal provinces, HIV prevalence in population aged 2+ years, HSRC 2008 survey (Shisana et al., 2009).

<sup>5</sup> Namakwa/Northern Cape and Uthukela/KwaZulu-Natal, ANC sentinel surveillance 2009 by DOH.

<sup>6</sup> Districts with estimated PLHIV numbers ranging from about 1,200 (Namakwa District/NC) to about 219,000 (Ehlanzeni District/MP); Metropolitan areas with estimated PLHIV numbers ranging between about 112,000 (Nelson Mandela Metro/Eastern Cape) to about 503,000 (eThekweni/KZN) -



the pool of HIV-positive persons who can transmit the infection to others, and therefore into an increasing number of persons who will require a long-term commitment for care and support.

**Fifth, in such a high prevalence environment (where a significant proportion of the population is HIV positive and an active sexual networks remain), reducing the annual HIV incidence rate to lower than the current level of 1.2% will take extraordinary effort.** South Africa's strategic prevention goal for 2011 was to reduce the 2007 HIV incidence rate by 50% (NSP 2007-2011), which means a reduction from 1.2%, estimated 2007 level, to 0.65% by 2011: this has proved to be unachievable with the latest incidence estimates still at around 1.2%. Such significant reductions in HIV prevalence can only be achieved if HIV incidence decreases substantially in the two provinces that are estimated to generate over half of all incident infections – Gauteng and KwaZulu-Natal (Gouws, 2010).

**Sixth, to bring about sustainable reductions in SA's HIV epidemic will require addressing longstanding sexual norms head-on.** Countries in Africa that have shown significant declines in HIV prevalence have shown concomitant declines in multiple sexual partnering; for SA to emulate this prevention success, sexual behaviour (and social norms about them) needs to change.

**Seventh, deciding which HIV interventions to implement to further reduce HIV incidence in South Africa is marred by complexity.** Making decisions about which HIV prevention programmes to implement in South Africa is complicated by gaps in evidence of 'what works best' in HIV prevention (to avert the most number of new infections) and by complexities in selecting the best combination of interventions. Evidence to determine which programmes work best to bring about these changes and avert new infections, have been found wanting:

- a) Some unproven interventions are still being implemented without being properly evaluated to measure their effectiveness on averting new HIV infections, e.g. social change and behaviour change communication programmes.
- b) Counter-intuitively, some well-conceptualised interventions have failed to show success (in Tanzania, for example, the "Mema kwa Vijana" (Good things for young people) combination trial<sup>7</sup> (which failed to show an impact on adolescents' HIV or HSV-2 status), whereas in Zimbabwe, the "Regai Dzive Shiri" project<sup>8</sup> also failed to have an impact on new HIV infections, though there was some positive effects on knowledge, and on attitudes relating to control within relationships and gender empowerment (Cowan et al., 2010); and
- c) Some disproven interventions keep receiving HIV prevention funding, such as STI treatment as a tool to avert new HIV infections in the general population.

Conversely, some interventions that have shown to at least reduce the risk of HIV transmission – including medical male circumcision (MMC), needle exchange, and use of systemic and topical antiretroviral medications by both HIV-infected and uninfected persons to either avert the risk of

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<sup>7</sup> MEMA Kwa Vijana (Good things for young people) 'Long-term evaluation of the MEMA Kwa Vijana Adolescent Sexual and Reproductive Health Program in rural Mwanza, Tanzania: A Randomised Controlled Trial', Technical Briefing Paper no. 7, November 2008. A combination of interventions including in-school sexual and reproductive health education; youth-friendly reproductive health services; community-based condom promotion and distribution (1999–2002 only); and community activities to create a supportive environment around adolescent sexual and reproductive health. While the intervention arm of this programme reported substantial, statistically significant improvements in knowledge and reported attitudes among both young men and women by 2002, there was no impact on adolescents' HIV or HSV-2 status, either in 2002 or in follow-up surveys conducted in 2008.

<sup>8</sup> Cowan, Frances M., et al., 'The Regai Dzive Shiri Project: results of a randomized trial of an HIV prevention intervention for youth', *AIDS*, 2010, 24:2541–2552. This project sought to intervene to change societal norms at the community level through a multi-pronged approach: use of professional peer educators to help in-school and out-of-school adolescents gain both knowledge and skills; a 22-session community-based programme for parents and other stakeholders; and training programme for nurses and other staff working in rural clinics.

HIV transmission or acquisition (pre-exposure prophylaxis, or PrEP) -- are not yet being implemented to scale.

Given the multitude of HIV interventions and the multitude of HIV epidemic drivers, it is generally accepted that not one single intervention would work on its own; rather, a well-chosen combination of interventions would be needed. Such combinations of interventions might differ at a local level based on a set of unique epidemic drivers, and is challenging to select. There are numerous methodological challenges in designing the optimal package of interventions that match the epidemiologic profile of a target population, in delivering that package at the population level, and in empirically assessing the combined, rather than single-intervention effect (Kurth et al. 2011). If these interventions of partial success are added to a combination prevention quiver, they are likely to have positive and negative effects which need to be weighed up. For instance, ART combined with PrEP is likely to have a bigger HIV prevention impact than either strategy alone, but overlapping drugs will increase drug resistance prevalence (Abbas et al., 2011). Topical microbicides (such as tenofovir gel) could potentially make a major, sustained impact on HIV incidence if widely used and adhered to (Cambiano et al., 2011). But this is only the case if used when condom-protected sex is not an option rather than as a condom substitute, and if the gel does not lead to sexual disinhibition. New tools need to not only be research for their efficacy at an individual level or their population-level effectiveness, but also for their added value in a package (measured as incremental impact on the incidence of HIV), and their interaction with other HIV prevention tools such as condoms, ART and partner reduction messages.

**Seventh, even if HIV prevention efforts were successful, the complications around measuring changes in the annual rates of new infections makes measuring of the effectiveness of HIV prevention programmes challenging.** Tracking changes in rates of new infections and therefore of the success of HIV prevention efforts is not straightforward and the quantification of the annual HIV incidence rate has proved a challenge making the monitoring of the success and impact of HIV prevention programmes difficult. Since the actual measurement of HIV incidence at a population level is not yet feasible (appropriate technologies for it does not yet exist), different HIV incidence estimation methods have been used in South Africa – making it somewhat difficult to should be used to track changes in national HIV incidence rates.

**Eighth, South Africa's HIV response management and coordination systems have not yet been set up to encourage local and provincial government level management of HIV prevention decisions and programmes.** When reviewing NSP 2007-2011 implementation, it was noted that the NSP lacked guidance on how provinces identify their specific prevention needs and develop corresponding prevention responses (USAID-HPI, 2011). Since the NSP was not followed by national operational plans to guide implementation, communicate annual targets and set out the monitoring and evaluation activities for the implementation and the coordination levels, the operationalisation of this ambitious strategy within the multisectoral set-up was challenging. Although most provinces drafted Provincial Strategic Plans, few formally approved them (with the exceptions of Northern Cape and Western Cape).<sup>9</sup> The National Department of Health (NDOH) drafted its own Operational Plan for HIV Prevention, and other government departments developed department-specific operational plans in line with the NSP 2007-2011. Province-specific prevention plans were elaborated by Western Cape and Gauteng provinces (USAID-HPI, 2011).

**Ninth, the financing for the HIV prevention response is being challenged by the global economic downturn** (and resultant reductions in development partner financing for HIV/AIDS) and by the government's growing bill to fund ART roll-out and maintenance. The high proportion of

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<sup>9</sup> A review of several provinces' draft Provincial Strategic Plans (PSPs) revealed that some provinces had simply copied their PSP from the NSP, with minimal understanding of the epidemic in the provinces or specifications for provincial, district and ward interventions (USAID-HPI, 2011 p10). In addition, their draft status means that few PSPs have been costed.

the population who are HIV positive require vast resources for ART, potentially deflecting time, resources and attention away from HIV prevention efforts. After an initially slow start, the ART programme has been scaled up rapidly with the 2011 goal in mind to expand access to ART to 80% of people in need. In 2009, for example, an estimated 1.7 million PLHIV<sup>10</sup> were in need of ART and by mid-year, the government reported 630,775 patients on ART (National Treasury, 2009:105). With the new AIDS treatment policy announced in 2009 by the President, the goalposts for universal access to ART have been shifted.<sup>11</sup> The nationwide HIV testing campaign to test and counsel 15 million South African adults during 2010-2011 will further increase the demand for ART with more PLHIV needing to be accepted into care and support programmes.

The rapid increase in the uptake of ART caused some provinces to face stock-outs and budget shortfalls in 2008 and 2009, and resulted in moratoriums being placed on the number of new patients being initiated on ART (Ndlovu, 2009). The National Treasury had to seek additional funding from the United States President's Emergency Plan for AIDS Response (PEPFAR), and increase its conditional grant for antiretrovirals (ARVs) for 2011/12 in its Medium Term Budget Policy Statement (MTBPS) (Ndlovu, 2009). The escalating financial costs of ART rollout has contributed a great deal to the escalating costs of the HIV response in South Africa. The cost and financing analysis by CEGAA (2010) emphasize the large financing demands on the country over the coming years as the costs grow from around ZAR16 billion to ZAR28-35 billion annually, particularly as 82% of the country's HIV response is domestically funded (Haacker, 2009). Funding these increases in the total HIV resource envelope whilst maintaining a strong focus on HIV prevention efforts, will be challenging.

**Despite these challenges, there are today unprecedented opportunities to turn the South African epidemic around.** Opportunities abound at all levels: Today there is more Government leadership and ownership than ever before. There is more experience in all aspects of managing the HIV and AIDS epidemic, and more experience in building human capacity to confront the AIDS challenge. More efficiency gains and cost saving potentials can be made and are already being made, ranging from procurement of generic combinations, rolling out nurse-initiated treatment and other task shifting, using lower cost treatment models, and employing more community based approaches. The country has a number of international partners who are supportive of the country's efforts to respond to the epidemic. It has world-class research groups and international research partnerships producing research findings of national and international importance. Also, there is an ongoing technology revolution with a fast-changing communication environment creating horizontally networked environments through cell phone and internet, providing opportunities to reach, mobilize and communicate with all the constituencies in the HIV response. Most importantly, there are signs that the epidemic may be turning, with lower infection levels in teenagers in 2008 compared to previous years.

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A more granular look at the sources of new HIV infections are provided in Section 3, whereas Section 4 presents information on why HIV has and continue to spread in South Africa, as well as what has been done to minimise the impact of these factors and arrest the spread of the epidemic. Finally, Section 5 presents 10 recommendations to help decimating new HIV infections in the next five years – it answers the question: **"What does South Africa need to do to be more successful in HIV prevention?"**

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<sup>10</sup> Based on CD4 threshold of 200, figure quoted in Universal access report 2010 (using the new WHO recommended threshold of <350, an estimated 2.6 million people would need ART, but South Africa did not adopt this international guideline).

<sup>11</sup> All pregnant HIV positive women with CD4 count less than 350 or with clinical AIDS symptoms regardless of CD4 count will have access to ART, as will all patients co-infected with HIV and TB and with CD4<350. All HIV positive infants under 1 year will receive ART.

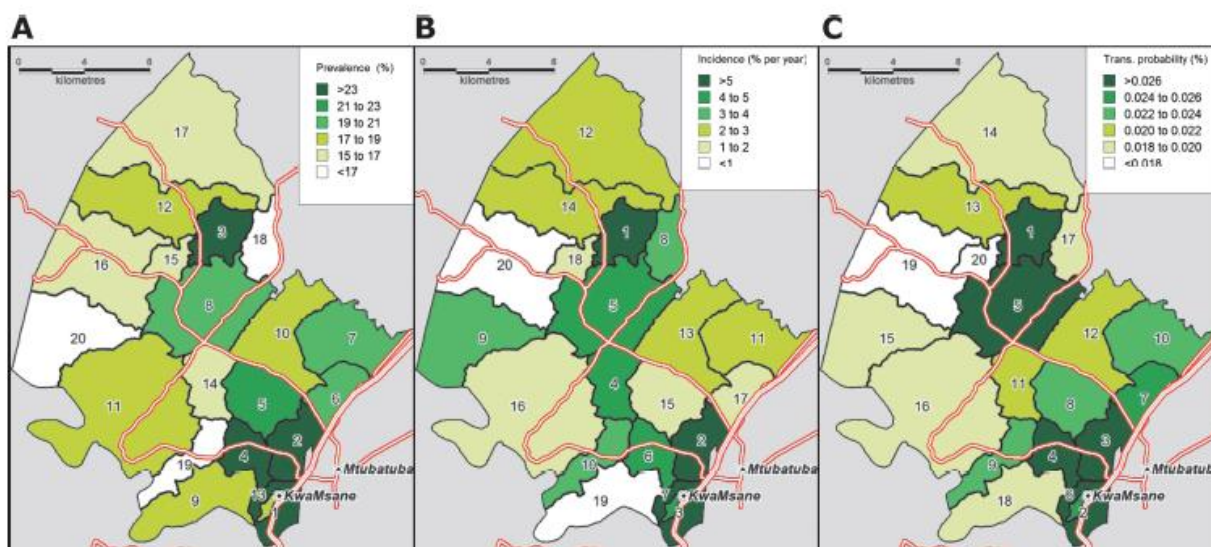
## SECTION 3. NEW HIV INFECTIONS IN SOUTH AFRICA

### 3.1 HIV incidence trends

**Using HIV incidence to measure new infections:** The rate of new HIV infections – usually measured as the rate of persons who become newly infected with HIV – is referred to as HIV incidence. It differs from HIV prevalence, which is the proportion of the population who are HIV positive at any given point in time. In the case of epidemics where a person is infected for life and as these epidemics mature, prevalence changes over time no longer follow trends in new infections as HIV prevalence becomes reflective of everyone infected over the last 10-15 years (life expectancy of PLHIV). This was amplified with the introduction of ART, which rapidly increased PLHIV’s life expectancy. In these situations, HIV prevalence changes are no longer telling about the epidemic dynamics and rate of *new* HIV infections (HIV incidence).

This concept is illustrated well using data from one longitudinal HIV research site in South Africa: the data shows that not all communities in the research site had the same ‘intensity’ of HIV. Depending on whether one used HIV prevalence, HIV incidence or HIV transmission probability<sup>12</sup> to rank them, the communities scored differently. Figure 3 illustrates this heterogeneity, and confirms (i) the heterogeneity in distributions of HIV infections in different geographic areas and (ii) HIV prevalence alone should not be used to measure the state of new infections in South Africa.

**Figure 3. Community ranking according to HIV prevalence (A), HIV incidence (B) and transmission probability (C), Hlabisa sub-district, South Africa (2010)**



Source: Barnighausen et al. (2010)

**HIV incidence trends:** HIV incidence is not, however, clear-cut to measure and an agreed test to assess whether an HIV infection is recent (and therefore a new infection) does not yet exist. South African researchers have been spearheading the development and validation of tools for HIV incidence measurement and estimation through different techniques. Comparison of incidence results for South Africa, obtained by different estimation methods, yield comparable results. These

<sup>12</sup> Transmission probability of HIV in a random sex act between a community member and a susceptible individual was devised by weighting early-, latent- and late-stage HIV prevalence by stage-specific transmission probabilities (Barnighausen et al., 2010). Per sex act, individuals in the early (late) disease stage are approximately nine (seven) times more likely to transmit HIV than individuals in the latent stage of HIV disease.

methods show that in South Africa, HIV incidence were between 2.0% - 2.4% per year in the first half of the 2000s and about 1.2% - 1.7% per year in the second half of the 2000s (KYE review).

**HIV incidence in different provinces:** The estimated number of annual new HIV infections in the provinces varies by up to a factor of 30, with the highest number of estimated new HIV infections in KwaZulu-Natal (100,787) and the lowest number in Northern Cape (3,177) (EPP estimates, Gouws, 2010) – see Table 1. HIV incidence is clustered in three provinces, where about three-quarters of South Africa’s new infections occur (KZN, GA, EC). Although Western Cape has a high density of PLHIV in a small area, it has comparatively few new infections (less than 4% of SA total). Northern Cape has low PLHIV density and low absolute number of new infections (less than 1% of SA total).

**Table 1. Estimated annual HIV incidence and number of new infections in adults 15-49 years in South Africa’s provinces (2009)**

Province	Estimated annual HIV incidence	Estimated new HIV infections	Percent of total new infections
<b>KwaZulu-Natal</b>	2.3 %	100,787	29.4 %
<b>Gauteng</b>	1.4 %	68,618	20.0 %
<b>Eastern Cape</b>	1.6 %	47,464	13.8 %
<b>Limpopo</b>	1.1 %	29,599	8.6 %
<b>North-West</b>	1.7 %	29,106	8.5 %
<b>Mpumalanga</b>	2.0 %	28,809	8.4 %
<b>Free State</b>	1.7 %	23,104	6.7 %
<b>Western Cape</b>	0.5 %	12,585	3.7 %
<b>Northern Cape</b>	0.7 %	3,177	0.9 %
<b>Total</b>	<b>1.2 %</b>	<b>343,249</b>	

Source: Gouws (2010), 2009 EPP estimates

**HIV incidence in different sub-populations:** Based on the best currently available national level estimates<sup>13</sup>, the following can be summarized about HIV incidence amongst different sub-populations in South Africa:

**Table 2. Summary view of higher and lower HIV incidence rates**

Higher HIV incidence rate	Lower HIV incidence rate
Youth 15-24 years	Children 2-14, Adults 25+ years
African (black) people	Coloured, Indian, White people
Residence in urban informal areas	Residence in urban formal, rural formal and rural informal areas
Resident in KZN, GA and EC	Residents in the other provinces
Those sexually active but neither married nor cohabiting, and those widowed	Those married and those cohabiting
Pregnant women	Women not currently pregnant
People with low educational attainment	People with high educational attainment
People reporting more than one sexual partner (past 12 months)	People reporting one sexual partner (past 12 months)
Sex workers and their clients	General population
MSM	Individuals neither reporting paid sex nor male-to-male sex

Sources: Rehle et al., 2007 (BED assay on 2005 samples) and MoT report (UNAIDS HIV incidence model for 2010).

<sup>13</sup> BED data derived from the 2005 national survey samples (Rehle et al., 2007)

The following sections summarise the trends in HIV incidence in different population segments, and postulate reasons for the changes over time:

### **3.2 Trends in new HIV infections amongst children younger than 15**

- **Most dramatic HIV incidence and HIV prevalence<sup>14</sup> declines in recent years, mainly due to PMTCT programme.**
- **However, still about 43,000 new infections in children aged 0-14 years (estimate for 2009) or approximately 11% of all new HIV infections in the country.**

*What may have contributed to the changes over time:* The Prevention of Mother-to-Child Transmission (PMTCT) intervention is believed to be the main factor leading to a halving of the HIV prevalence level in children aged 2-14 years between 2002 and 2008. The PMTCT programme was launched in 2001 and significantly scaled up since. By 2005, PMTCT services were available at over 3,000 health sites nationwide. By 2008, 95% of public health facilities provided PMTCT services. Government data suggest that in 2009, 90% of HIV-positive mothers received treatment to prevent MTCT (DHIS data), but the KYR review expresses doubts about the denominator and claims that this figure may be an overestimate,<sup>15</sup> and also points out that coverage has been uneven, with greater gains made in some health districts (typically urban ones) than others.

### **3.3 Trends in new HIV infections amongst young people aged 15 to 24**

- **In 2005, an estimated 34 of 100 all new infections in South Africans aged 2+ years occurred in youth aged 15-24 years in 2005** (Rehle et al., 2007 – BED assay).
- **Between 2005 and 2008, HIV prevalence amongst young women declined significantly, but not amongst young men**
- **An estimated 60% reduction in annual new HIV infections in recent years amongst young women**
- **However, incidence in young females is still higher than in young males, especially in young women above 18 years of age**

Between 2005 and 2008, HIV prevalence in young women aged 15-24 years decreased significantly, from 16.9% to 13.9%. Even in young males, who have always had much lower infection rates than females, HIV prevalence dropped to a slightly lower level from 4.4% in 2005 to 3.6% in 2008 (difference not significant) – see Figure 4. The new ASSA2008 model estimates a downturn in young people's HIV prevalence, from 9.2% in 2005 to 7.7% in 2010.

Regarding time trends in the HIV incidence rate<sup>16</sup>, **a large decrease in incidence was estimated for young females (from 5.5/100 person-years to 2.2/100 person years – a 60% reduction)** but not for young males (estimate only available for all males aged 15-40 years – at 1/100 person-years at both time points) (Rehle presentation, 2010). There is evidence that HIV

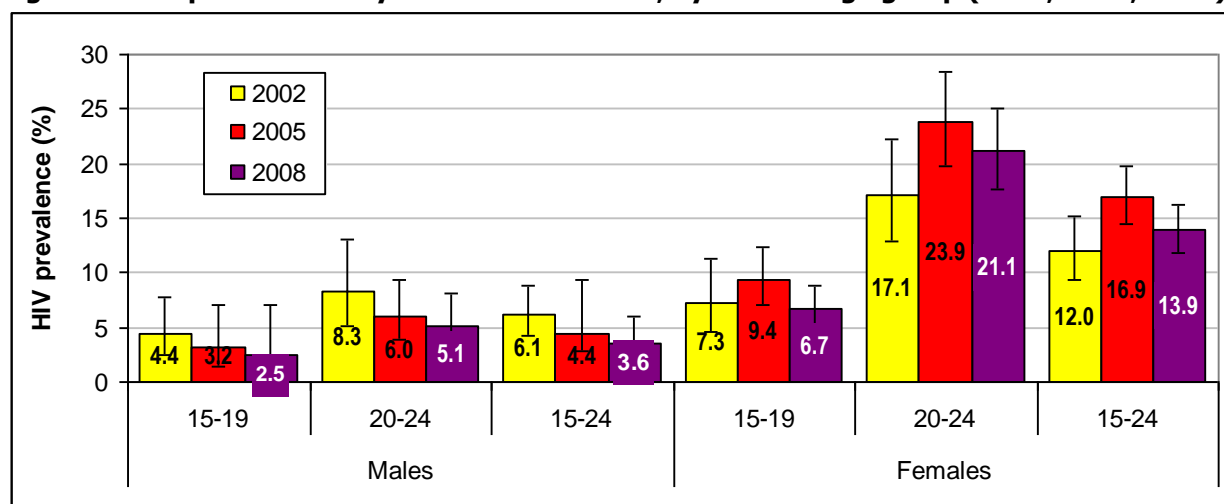
<sup>14</sup> Unlike amongst adults, HIV prevalence and HIV incidence trends amongst children typically follow similar patterns, because all infant infections are incident infections

<sup>15</sup> The PMTCT cascade based on DHIS data leads to coverage figures of >100% for the first ANC visit and NVP treatment uptake, which confirms that there are errors with the denominator for coverage calculations. A study by Mate et al. (2009) in KZN PMTCT services reported as main problem areas the initial transfer of data from the individual clinic registers to the Monthly Summary Sheets, and the incomplete submission of data from clinics to the District Information Offices for capture into the DHIS.

<sup>16</sup> Based on difference between two inter-survey periods (2002-2005 and 2005-2008), using a "synthetic cohort" approach as described by Hallett et al. (2008) and accounting for the effect of ART. Estimations by Rehle et al. (2010).

incidence has come down in girls aged 15-17 years, but then rapidly rises in 18-20 year olds (single-year age group analysis by Rehle, 2010).

**Figure 4: HIV prevalence in youth in South Africa, by sex and age group (2002, 2005, 2008)**



Source: Secondary data analysis HSRC for KYE

**The nationally representative youth survey implemented in 2003 found the same pattern of very high HIV prevalence in young women compared to young men** (Pettifor *et al.*, 2004). Overall the HIV prevalence among 15-24 year olds was 10.2% (95% CI 9.3-11.3).<sup>17</sup> Analysis by single-age group suggested that **HIV prevalence in females increases rapidly after the 20<sup>th</sup> birthday** (age 20: 14.4% HIV-positive, age 21: 31.2% HIV-positive – the difference however not reaching statistical significance due to wide confidence intervals). This jump in HIV prevalence was concomitant with onset of sexual activity: Among females aged 15-19, less than half reported having had sex (47%), but in the age group 20-24, sexual inception was almost universal (91%) (Pettifor *et al.*, 2004).

*What may have contributed to the changes over time:* Although it is difficult to attribute what contributed to this slowdown of youth infections, these reductions in new infections do coincide with higher levels of reported condom use in youth and reductions proportions of young people reporting multiple sexual partners. Sexually active females may have reduced partner numbers substantially between 2006 and 2009 from 4.2% to 1.7% (two or more partners in past month).<sup>18</sup> While partner numbers are frequently underreported by females due to social desirability bias, the decreased frequency of multiple partners (which were often concurrent since the reporting period was one month) may have contributed to the recent reduction in HIV prevalence and HIV incidence in young women.

In contrast, sexual debut, sexual abstinence or intergenerational sex could not have contributed as these sexual behaviours have shown negative trends. Based on the available data, sexual abstinence has not gained ground among young people: both the 2002 and the 2005 HSRC surveys

<sup>17</sup> HIV prevalence among males 15-24 was 4.8% (95% CI 3.9-5.9) and among females 15-24 it was 15.5% (95% CI 13.7-17.6). For those age 15-19 years the prevalence among males was 2.5% (1.8-3.4), while for females it was 7.3% (5.9-9.0) which is identical to the level measured in the 2002 national survey in this group of females. Among those age 20-24 years the prevalence among males was 7.6% (6.3-9.3), which fits very well into the downward trend seen in the 2002, 2005 and 2008 surveys. Among females it was 24.5% (20.3-29.3), similar to the prevalence level reported from the 2005 survey in this group (Pettifor *et al.*, 2004 p29).

<sup>18</sup> Age group 16-24 years, National Communication Surveys 2006 and 2009 self-reported data on 2 or more sexual partners in the past month among those sexually active in the last 12 months. Males similar level of 13.0% and 14.3% in the two surveys, respectively.

concluded that there was a trend among youth towards earlier sex, and sex before the 15<sup>th</sup> birthday has significantly increased between 2002 and 2008 according to youth's self-reported behaviours.

There is an even larger secular trend towards earlier sex and a lack of data suggesting that transactional sex has declined: Median age-at-first-sex was 20 years for men and women born before 1950 and 18 years for those born in the 1980s. Similar to the self-reports of earlier sexual debut, the self-reported increase of intergenerational sex by female teenagers also does not help explain the reduced HIV incidence.<sup>19</sup>

*In conclusion, reduction in the proportion of South African young women who had multiple partners and higher condom use levels amongst young women are most likely to have contributed to reduced HIV incidence amongst them.*

### **3.4 Trends in new HIV infections amongst adults aged 25 and older**

- **HIV prevalence trends among persons of different ages in this sub-population vary substantially: some show increases in trends, others show decreases, whilst others are stable with no significant changes.**
- **In 2005, an estimated 54 of 100 new infections among South Africans<sup>20</sup> occurred in adults aged 25 years and older** (Rehle et al., 2007 – BED assay).
- **Estimations suggest that the annual HIV incidence rate in adults aged 25 years and above is slightly lower than in youth.** However, adults aged 25 and older experience more new infections than the youth due to this sub-population's size (than double the size of the youth population aged 15-24 years).<sup>21</sup>

HIV prevalence trends over time in this age cohort suggest that HIV prevalence has increased between 2002 and 2008. In adults aged 25 years and above, HIV prevalence was higher in 2008 (16.8%) compared to 2005 (15.6%, differences not statistically significant). This is largely due to the longer survival of people on ARV treatment in the age groups who are predominantly receiving ART.<sup>22</sup> It has been worked out that if the 2008 HIV prevalence level of adults aged 15-49 (16.9%) was adjusted for the additional number of PLHIV due to increased ART-induced longevity, the level would be at 15.2%, a pre-2002 HIV prevalence level (Rehle *et al.*, 2010)<sup>23</sup> – see Figure 5 (hashed bar).

Figures 6 and 7 suggest that if one looks at HIV prevalence trends amongst adults aged 25 and older, the trends in different 5-year age bands paint a different picture than the overall trend suggests: among men (figure 6), HIV prevalence has declined the most in age group 45 – 49, whilst women (figure 7) has seen the highest increase in HIV prevalence amongst age groups 35 – 39.

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<sup>19</sup> The percentage of young people reporting sex partners 5 or more years older than themselves increased from 18.5% in 2005 to 27.6% in 2008 among females, and from 9.6% to 14.5% among males (HSRC data).

<sup>20</sup> Aged 2 years or older

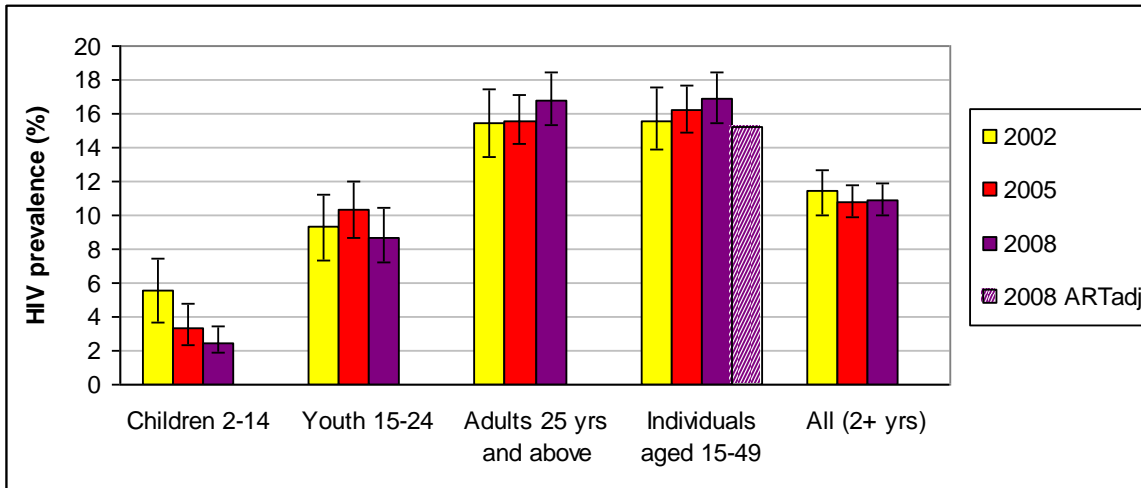
<sup>21</sup> Age-group specific estimates of incidence tend to have large confidence intervals, but both ASSA and BED estimates suggest a slightly lower annual incidence *rate* but a higher *number* of incident infections compared to young people.

<sup>22</sup> By July 2009, the cumulative number of adults and children on ART provided by the public sector was 871,914 (official statistics of the Department of Health, South Africa, July 2009, referred to in Rehle *et al.*, 2010).

<sup>23</sup> Qualitative determination of commonly used ARVs in HIV-positive dried blood samples by High Performance Liquid Chromatography coupled to Tandem Mass Spectrometry (Rehle, 2010).



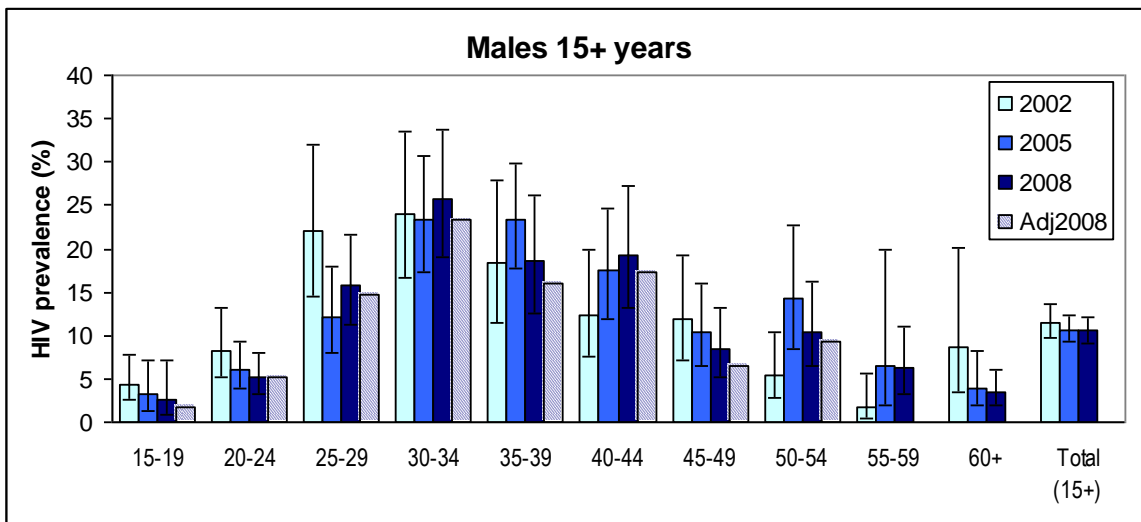
**Figure 5: HIV prevalence levels in different age groups of South Africans (2002, 2005, 2008)**



Sources: Shisana & Simbayi (2002), Shisana *et al.* (2005, 2009). ART adjusted data from Rehle *et al.*, 2010

**Figure 6: HIV prevalence in adult males in South Africa (2002, 2005, 2008)**

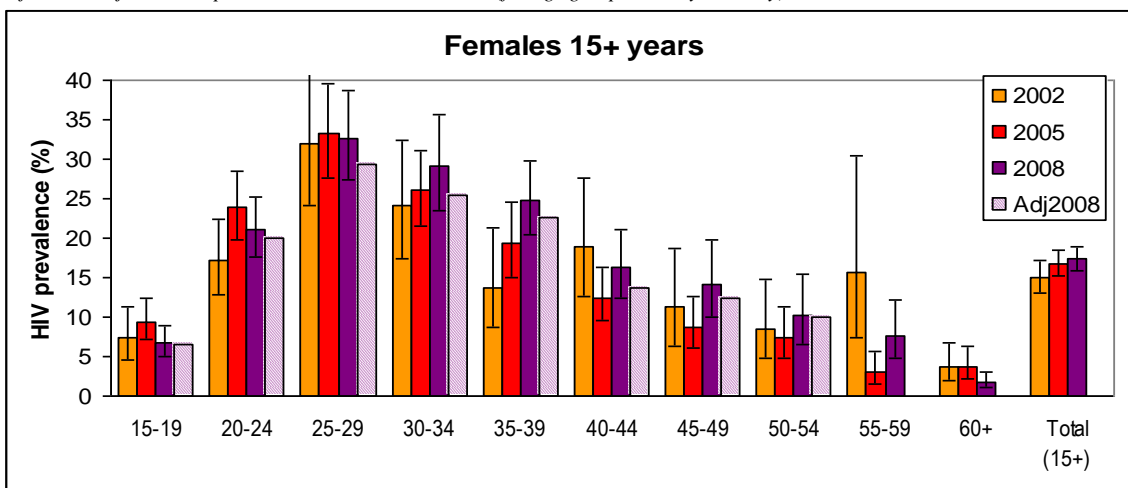
Adj2008 = Adjusted HIV prevalence without ART in 2008 (for age groups 15-54 years only)



Sources: Shisana & Simbayi (2002), Shisana *et al.* (2005, 2009). ART-adjusted HIV prevalence levels from Rehle *et al.* (2010)

**Figure 7: HIV prevalence in adult females in South Africa (2002, 2005, 2008)**

Adj2008 = Adjusted HIV prevalence without ART in 2008 (for age groups 15-54 years only)



Sources: Shisana & Simbayi (2002), Shisana *et al.* (2005, 2009). ART-adjusted HIV prevalence levels from Rehle *et al.* (2010)

HIV incidence trend data over time in this sub-population is not available, so reasons for the changes over time could not be elucidated.

### **3.5 Trends in new HIV infections amongst different ethnic groups**

- **Higher HIV incidence amongst black than other ethnic groups.**
- **Reductions in HIV prevalence amongst white, coloured and Indian people, but a small increase in HIV prevalence in black people (most likely due to increased uptake of ART).**

There is an enormous discrepancy in HIV incidence (and HIV prevalence) between different ethnic groups in South Africa<sup>24</sup>. BED assay data were only available for 2005, but suggested a large incidence differential between black people and non-black people (Rehle et al., 2007): nine times higher annual HIV incidence rate (1.8% vs. 0.2%), and 40 times greater estimated number of new HIV infections per year (557,000 vs. 14,000) in black vs. non-black people. The clustering of HIV infections in black people has been found in a number of other studies such as the 2003 youth survey (Pettifor *et al.*, 2004), the 2007 KZN HIV Impact Study among company employees (Colvin *et al.*, 2007), and the 2009 survey among tertiary students (HEAIDS, 2010).

Race is an important HIV epidemiological variable within the South African context because it has, historically, personified the varying socio-econo-cultural factors that have influenced the risk of HIV infection. Using data from the Cape Area Panel Study, Kenyon *et al.* (2009), for example, found that race was only a strong predictor of STI symptoms in *univariate* analysis. Once reported sexual concurrency behaviours were integrated into the multivariate model, race was no longer a significant predictor – implying that differences in sexual concurrency behaviours are a key mediating factor responsible for differences in STI transmission rates and that it is not ethnicity in and of itself that poses a risk for HIV infection.

### **3.6 Trends in new HIV infections in populations that live in rural and urban areas**

- **Urban informal areas have had high and stable HIV prevalence levels.**
- **Urban informal areas had the highest incidence rates:** Over 6 times higher annual HIV incidence rate in urban informal areas (5.1%) compared to residents of urban formal areas (0.8%); over 3 times higher incidence rate in informal urban areas compared to residents in any rural areas (1.5%) (Rehle et al., 2007).
- **Rural informal areas have experienced significant increases in HIV prevalence between 2002 and 2008.**

Linked to the disproportionate prevalence of HIV infection in the black population is the high levels of incident (and prevalent) HIV infections in urban informal areas. These areas<sup>25</sup> are home to vulnerable, less educated citizens, who may be unemployed or work in the informal sector. Respondents working in the informal sector had overall the highest HIV prevalence, with almost one

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<sup>24</sup> The composition of the South African population by race is approximately 79% Africans, 9% Whites, 9% Coloureds and 3% Indians (mid-year population estimates 2008, Shisana *et al.* 2009 p23).

<sup>25</sup> *Urban informal*: Slums, squatter settlements and the like which are in the urban municipal areas. They commonly have informal street layouts, some areas have electricity some do not. They are found around towns/cities or outskirts of townships.

third of the black informal workers HIV positive. In women (2005 data), the greater the reported lack of cash, the greater the chances of being HIV-positive.

The epidemic trends in the different types of settlement areas are also worth to note: While HIV prevalence in urban formal areas is on a downward trend between 2002 and 2008 (not statistically significant), it stayed high in the urban informal areas, and in rural areas – both informal and formal<sup>26</sup> – HIV prevalence has increased by over 5% between 2002 and 2008 (statistically significant for rural informal areas, but not for rural formal areas due to small sample size). This statistic suggests that the HIV epidemic may still be growing in certain rural areas of South Africa, since the magnitude of the HIV prevalence increase cannot be explained by ART alone.

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In order to advise on future priority prevention interventions and services to turn the epidemic around, the factors that contribute to continuing new HIV infections in South Africa, and the country's current efforts to address them, are being considered in this next section.

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<sup>26</sup> *Rural informal (or tribal areas)*: Typical rural African villages often with no electricity or tarred roads, and informal street layout. *Rural formal*: Farms where accommodation is in the form of bricks and often well layout streets. This accommodation would often be for workers and residents of the farms. There are some basic amenities in these areas.

## SECTION 4.

### WHAT CAUSES NEW INFECTIONS IN SOUTH AFRICA AND WHAT IS BEING DONE ABOUT IT

In 2009, it was estimated that over 1000 South Africans became HIV positive every day. Given that HIV is an infectious disease that is mostly sexually transmitted in South Africa, these new infections continue to occur when there is sexual contact between HIV-negative and HIV-positive persons. The likelihood whether an infection will occur if sexual contact has taken place is influenced by biological factors and can be mitigated by different solutions; the likelihood that unprotected sexual contact between an HIV-negative and HIV-positive person will occur is influenced by the sexual and relationship cultures – and broader, more distal factors that modulate these cultures – in South Africa. In this section, these factors are summarised, the latest evidence on them presented, and the country's current efforts to address these influences overviewed.

#### 4.1 Biological factors that influence the risk of HIV acquisition after sexual contact has occurred

##### 4.1.1 Male circumcision culturally not prevalent in some ethnic groups in South Africa

**Male circumcision reduces the risk of HIV acquisition.** The Orange Farm trial and others confirmed that male circumcision (MC) offers biological protection against HIV acquisition (Bongaarts *et al.*, 1989 ; Moses *et al.*, 1990; Auvert *et al.*, 2005; Drain *et al.*, 2006, Bailey *et al.*, 2007; Gray *et al.*, 2007). A recent systematic review of the effectiveness and safety of MC by the South African Cochrane Centre found a relative risk reduction of acquiring HIV of 54% at 21 or 24 months following MC (Siegfried *et al.*, 2009).

**The protective effect is sustained over time and the cumulative protective effect increases.** Bailey *et al.* (2010)<sup>27</sup> reported from the Kenyan trial after 54 months of observation that MMC's protective effect was sustained (HIV incidence in MMC group: 0.91 per 100 person-years vs. 2.45 per 100 person-years in controls,  $p=0.0007$ ). Similarly, the Ugandan trial, found after 10,000 person years of follow-up a sustained high protective effect of MMC ( 67% reduced risk). Uptake of MMC was over 80% in the former control group, and there was no discernible risk compensation in the population in terms of partner number or condom use (Kong *et al.*, 2011)<sup>28</sup>.

**In South Africa, the levels of MC vary vastly by ethnic group and therefore by province.** Performed mainly on young men as a part of initiation rites of passage, MC has been a custom among the Venda, Pedi, Ndebele and Tsonga<sup>29</sup>, as well as the Xhosa<sup>30</sup> and South Sotho (Mayatula & Mavundla, 1997; Simbayi, 2002; Meissner & Buso, 2007; Connolly *et al.*, 2008). These are mostly post-puberty circumcisions (Connolly *et al.*, 2008). As a result of these varying ethnic cultural traditions, provinces in South African have varying MC prevalence – see Figure 8.

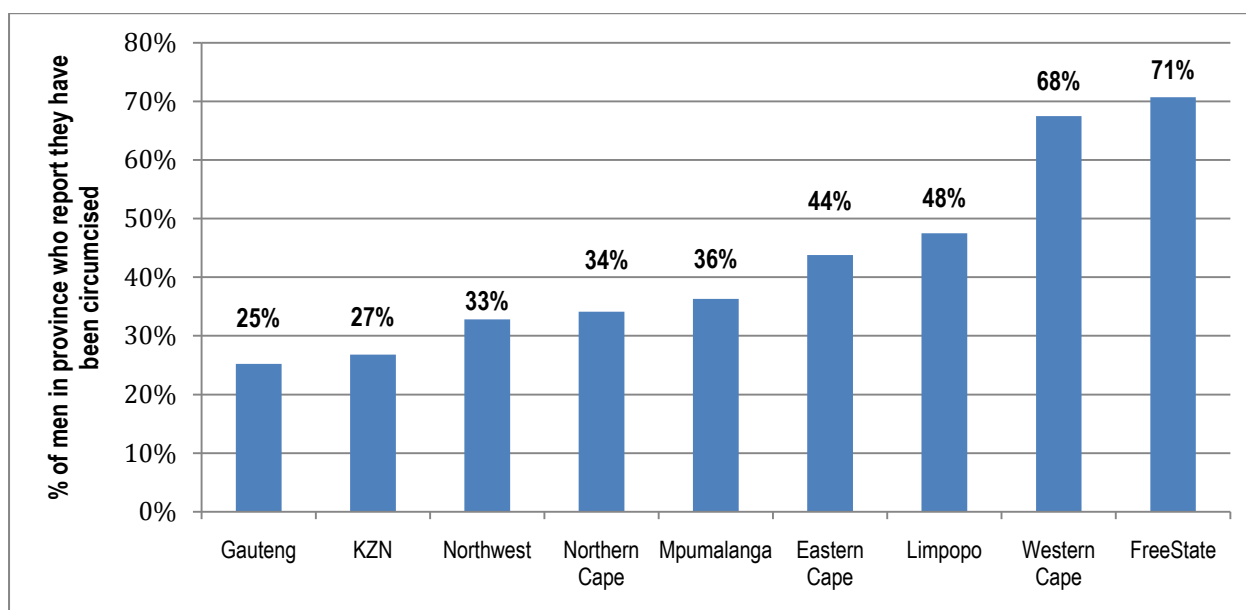
<sup>27</sup> Bailey RC *et al.* (2010). The protective effect of adult male circumcision against HIV acquisition is sustained for at least 54 months: results from the Kisumu, Kenya trial. IAC 2010; Abstract FRLBC101. <http://www.medpagetoday.com/MeetingCoverage/IAC/21369>

<sup>28</sup> Kong *et al.*, 2011. "Longer-term Effects of Male Circumcision on HIV Incidence and Risk Behaviors during Post-trial Surveillance in Rakai, Uganda", Paper #36, CROI 2011. <http://www.retroconference.org/2011/Abstracts/41239.htm>

<sup>29</sup> Residing primarily in the northern provinces of Limpopo, Mpumalanga and Gauteng

<sup>30</sup> Residing primarily in Eastern Cape. Not all Xhosa-speaking groups circumcise traditionally, for instance it is not practised amongst the Bhaca, Mpondo, Xesibe or Ntlangwini.

**Figure 8. % of men in provinces of South Africa who reported in 2003 that they have been circumcised**



Source: Data from SADHS, 2003

However, problems with self-reported MC status has been reported in South Africa and the MC prevalence figures presented in Figure 8 need to be treated with some caution. Taljaard *et al.* (2009) found in the Orange Farm male circumcision trial that upon physical examination, 45% of men who said they were circumcised had intact foreskin. According to South African population-based survey data, men in South Africa who self-reported having been circumcised before first sex were significantly less likely to be HIV-positive (HSRC 2005 data, multivariate analysis, aOR 0.53,  $p=0.047$ ).

### **Nature and Scope of Current HIV Prevention Response to Address this Biological Risk Factor**

South Africa has begun to address MC at both policy and programme level. SANAC has drafted male medical circumcision guidelines in line with WHO and UNAIDS recommendations. These guidelines aim to further the NSP's prevention goal through the provision of safe, accessible, and voluntary male circumcision. The draft guidelines suggest a dual strategy that promotes and institutionalizes both neonatal and young adult circumcision.

However, the current draft does not provide sufficient guidance on how to address socio-cultural barriers to implementation<sup>31</sup>, and does not offer strategies for achieving high MC coverage e.g. introducing circumcision in areas with high HIV prevalence and low prevalence of circumcision, and creating demand for circumcision in traditionally non-circumcised communities (HPI policy review, 2011). In the Orange Farm study, for example, creating demand for male circumcision has been the most significant obstacle to achieving higher levels of population-level impact of MC: after five years and numerous efforts to increase demand, MC prevalence in the community has only increased from a baseline of 13% to 49% (mathematical modelling suggests that MC will only be to have a short term population-level effect on new infections once MS prevalence reaches 75%). Adverse events surveillance for MC is also not in place comprehensively, and there has not been a concerted

<sup>31</sup> HPI's assessments revealed stakeholders' concerns that the guidelines do not directly address the concerns of groups that practice traditional circumcision and the sanctity of traditional MC, for instance among some tribes in Eastern Cape.

effort to introduce neonatal circumcision routinely at all health facilities that offer maternal and child health services.

In April 2010, KwaZulu Natal became the first province to offer voluntary male medical circumcision (VMMC) services after King Zwelithini had given his support to VMMC.<sup>32</sup> The province has been circumcising males from the age of 15 at health facilities as well as at special weekend camps run together with traditional leaders. In December 2010, King Zwelithini invited the almost 18,000 men who had been circumcised to form a special regiment to fight HIV and abuse of women and children. There was some controversy due to the use of the Tara Klamp instead of the forceps method as it was seen to increase the risk of bacterial infection.<sup>33</sup> However, a study in Kenya (Muraguri et al, 2011) showed that the clamp not only leads to fewer adverse events, but that it requires fewer personnel and enabled more circumcisions to be performed per day.

#### **4.1.2 Existence of (discordant couples) and intra-couple transmission**

There are approximately 817 000 discordant couples in South Africa. The HIV-negative partners in these relationships are at increased risk of HIV acquisition because of the frequency of sexual intercourse with an HIV positive person. Finding these persons and putting the HIV-positive person in the relationship on ARVs (irrespective of CD4 count) is a new HIV prevention strategy that has recently been recommended by the WHO and its partners, given the positive results of the HPTN052 trial (96% reduction in risk of HIV transmission from index partner to HIV-negative partner in the relationship).

New infections in this sub population happen either through within-couple transmission (in case of unprotected sex despite sero-discordance) or through infections brought into the couple from outside sexual contacts. Research data from East and Southern Africa have highlighted that 27-33% of infections within discordant couples do not come from the index infected partner, but from some outside partner (Celum et al., 2010; Dunkle et al, 2010).

#### **Nature and Scope of Current HIV Prevention Response to Address this Biological Risk Factor**

A comprehensive programme for finding, supporting and treating discordant HIV couples so as to reduce the risk of HIV transmission from the index case (especially if the couple desires to have a child) to the HIV-negative partner. One of the entry points to locate these discordant couples, is couple-based HIV counseling and testing. HIV counselling and testing has not been promoted as a couple-based service in South Africa, to date. In 2009, South Africa's socially marketed New Start HCT services embarked on a campaign that uses celebrity couple endorsement to encourage couples to test for HIV together. Otherwise, most of South Africa's HCT efforts continue to be targeted at individuals rather than at couples. The lack of guidelines for addressing sero-discordant couples is flagged up in the HPI policy review. Couple-counselling admittedly has its downsides: It is a labour- and time-intensive approach with limitations on scale, and men have been reluctant to use HCT services either within expanded PMTCT or in dedicated VCT efforts. Also, the context of low marriage/cohabitation rates poses a further limitation to the targeting of HCT to couples. Furthermore, it has been raised that another potential pitfall of couples counseling is that the negative partner may be inclined to look for sex outside the primary partnership, knowing that the primary partner is HIV infected. Conclusive data on the value of couple counselling are

<sup>32</sup> "Regiment for circumcised men" by K. Cullinan, on [http://www.health-e.org.za/news/easy\\_print.php?uid=20033031](http://www.health-e.org.za/news/easy_print.php?uid=20033031) (accessed 18 March 2011)

<sup>33</sup> Men circumcised with the Tara Klamp are now routinely given antibiotics to prevent infection and the province has agreed to do a retrospective study on men circumcised with the clamp and with forceps to evaluate the methods (Cullinan 2010, on [http://www.health-e.org.za/news/easy\\_print.php?uid=20033031](http://www.health-e.org.za/news/easy_print.php?uid=20033031), accessed 18 March 2011)

outstanding,<sup>34</sup> it has not been proven that the long term impact of couple counseling is better than individual counseling or other BCC approaches. Further, a couple-approach to counseling and testing should no longer be the only tool to support these persons at increased risk of HIV acquisition.

### **4.1.3 Vertical transmission from mother-to-child due to non-optimal PMTCT practices**

**In 2009, an estimated 42,726 new infections happened in children aged 0-14 years - 11% of all new infections estimated for South Africa** (Spectrum estimates, the model assumes that all childhood infections are vertically transmitted). Although most vertical infections will not lead to secondary infections, there is evidence that some onward transmission is possible: local and Zimbabwean estimates predict that about one-third of infected infants are slow progressors with median survival of 16 years (Ferrand *et al.*, 2009). This suggests that some vertically transmitted infections may lead to further infections when slow progressors become sexually active.

**Mixed feeding of infants is frequent in South Africa and associated HIV with transmission risks.** The proportion of infants exclusively breastfed was low in both the 1998 and the 2003 SADHS. Only 8% of infants under 6 months were reported to have been exclusively breastfed. Coovadia *et al.* (2007) found that breastfed infants who also received solids were significantly more likely to acquire HIV infection than exclusively breastfed children (Hazard Ratio 10.9,  $p=0.018$ ).

**Wet-nursing has been shown to be risky for the infant.** Shisana *et al.* (2005) found that HIV sero-positivity in children was highly significantly associated with having been breastfed by a non-biological mother (aOR 17.0,  $p<0.001$ ), but not with ever having received milk from a milk room i.e. a hospital room where baby milk is prepared (aOR 1.2,  $p=0.5$ ).

Apart from these two risk factors – mixed infant feeding and wet-nursing – there is an even greater factor which contributes to vertical transmission and is of key importance: **unwanted (unintended) pregnancies**. In 2003, 23% of births in the last five years in South Africa were not wanted at the time they were conceived (DHS 2003). Almost 30% of recent first births were mistimed and 25% were unwanted. Among HIV-positive women in Johannesburg, pregnancy was planned in only 29% of women who became pregnant on ART and in 31% of those who started ART during pregnancy (Hoffman *et al.*, 2010). The international literature states that preventing unintended pregnancies among HIV-positive women could produce equivalent reductions in infant HIV incidence as ARV prophylaxis during pregnancy (Sweat *et al.*, 2004; Duerr *et al.*, 2005).

### **Nature and Scope of Current HIV Prevention Response to Address this Biological Risk Factor**

The Prevention of Mother-to-Child Transmission (PMTCT) intervention is believed to be the main factor leading to a halving of the HIV prevalence level in children aged 2-14 years between 2002 and 2008. The PMTCT programme was launched in 2001 and significantly scaled up since. By 2005, PMTCT services were available at over 3,000 health sites nationwide. By 2008, 95% of public health facilities provided PMTCT services. Government data suggest that in 2009, 90% of HIV-positive mothers received treatment to prevent MTCT (DHIS data), but the KYR review expresses doubts about the denominator and claims that this figure may be an overestimate,<sup>35</sup> and also points out

<sup>34</sup> Burton *et al.* (2010) write in their review on couple-focused prevention: "Although couples-focused approaches to HIV prevention appear initially promising, additional research is necessary to build a stronger theoretical and methodological basis for couples-focused HIV prevention"

<sup>35</sup> The PMTCT cascade based on DHIS data leads to coverage figures of >100% for the first ANC visit and NVP treatment uptake, which confirms that there are errors with the denominator for coverage calculations. A study by Mate *et al.* (2009) in KZN PMTCT services reported as main problem

that coverage has been uneven, with greater gains made in some health districts (typically urban ones) than others.

#### **4.1.4 Viral clade (sub-type of the virus)**

Acute stage infections – which can have prolonged high infectiousness in “extended acutes” (Novitsky et al., 2011) - carry a high transmission probability compared to the chronic low grade infections within persons in stage 2 and 3 of the syndrome. As opposed to an assumed three to six weeks of acute infection, the Novitsky study suggests that up to 34% of persons with HIV sub-type C infection are ‘extended acutes’ and that they are in acute infection stage (characterised by high viral loads) for at least 400 days. Sub-type C HIV infection is almost ubiquitous in southern Africa.

#### **Nature and Scope of Current HIV Prevention Response to Address this Biological Risk Factor**

This research is new and still being discussed and digested. Also, it is not a clear-cut intervention for which can be implemented to address this factor, although a communications campaign will be important to explain the implication of a more virulent strain of the virus being prominent in the region, especially as these research results become more common knowledge.

## **4.2 The sexual and relationship culture in South Africa**

In South Africa, the majority of new infections are sexually transmitted. Therefore, it is important to understand the sexual and relationship culture in South Africa as this culture can influence sexual behaviours that increase (or decrease) the risk of unprotected sexual exposure to an HIV-positive person (and therefore the risk of acquisition of HIV).

- a) **Multiple serial and concurrent partners**, who are both long-term and casual partners
- b) **Low level of consistent condom use**, especially in longer-term relationships and in pregnancy/ post-partum
- c) **Transactional and commercial sex: acceptance of ‘sex as commodity’**
- d) **Late and low levels of marriage and co-habitation**
- e) **High levels of post-partum abstinence, combined with relatively high pregnancy rates**
- f) **Insufficient risk perception** among people with considerable risk behaviours, pointing to poor or partial understanding of HIV transmission
- g) **Unprotected anal intercourse** in homosexual and heterosexual contacts

### **4.2.1 Multiple serial and concurrent partners**

The extent of multiple partner behaviours remain poorly understood, but sexual concurrency has been described as a key driver of generalised HIV epidemics (ref 5 Helleringer). Survey data on partner numbers and partnership concurrency seem to provide a different picture than qualitative in-depth studies or surveys using alternative interview techniques: McGrath *et al.* (2009) found that in the ACDIS cohort in KZN, concurrency indicator levels were ten times higher if women self-completed the interview compared to face-to-face interviews.<sup>36</sup> To a lesser extent, this applied also

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areas the initial transfer of data from the individual clinic registers to the Monthly Summary Sheets, and the incomplete submission of data from clinics to the District Information Offices for capture into the DHIS.

<sup>36</sup> Currently in 2+ relationships: 3.4% (self-completed) vs. 0.3% (face-to-face); 2+ partners in the last month: 2.0% (self-completed) vs. 0.2% (face-to-face) (2003 survey data, McGrath *et al.*, 2009).



to men.<sup>37</sup> These data strongly support the notion that face-to-face interviews lead to underestimations of sensitive sexual behaviours.

However, it is known that concurrent partnerships can accelerate the transmission of HIV and other STIs in a population (ref 1-4 Helleringer AIDS 2011). Long-term concurrent partnerships in particular may play a crucial role in connecting the sexual networks that transmit HIV (ref 6 Helleringer). New evidence from a Durban-based study also indicates that some individuals have sustained high HIV RNA load during primary HIV infection after the viraemia peak ("extended high viraemia") and may be especially prone to onward-transmit virus within sexual networks (Novitsky et al., 2011 – a strong association between levels of HIV-1 RNA load and viral transmission had been shown in previous studies).

- In South Africa, **HIV prevalence is higher in respondents reporting more sexual partners (serial or concurrent)**. Women reporting more than one partner at the time of survey in 2005 were 4.3 times more likely to be HIV-positive ( $p=0.0001$ ).
- Comparing multiple partner data across five national surveys (three HSRC and two NCS), there is **some indication of an increase over time in the proportion of 16-55 year old men reporting multiple sexual partnerships** in the past 12 months.
- Reported MSP frequency varies by race and is highest in African men. It peaks in people in their twenties, but there may be underreporting in older age groups where marriage is more common. The sexual concurrency analysis of the NCS 2009 data confirms the comparatively higher concurrency prevalence for African men.
- Sexual relationships were seen as **a pathway towards a number of distinct benefits**. Multi-partnering is closely linked to transactional relationships and frequently also involving age-disparate partners. Sexual exchange provides a means for survival especially among the unemployed.
- Twelve percent of men and 2% of women of all the sexually active in the age group 25 and older report more than one partner in any month during the past year. The true percentage is likely to be higher, since unfaithfulness is frowned upon and rather kept secret. In the same survey, 23% of all partnered individuals aged 25-55 years said that they believe their partner is having another sexual partner.
- In qualitative research (Parker/CADRE, 2007), **the concept of the 'main' partner and 'other' partners was found a popular one**, and being the 'other' partner seems accepted, particularly if it is agreed upon at the onset of a relationship. Concurrent relationships also occur as a product of previous relationships not formally terminated. Also, having a child together creates a bond that extends to maintaining an ongoing sexual relationship even when the parents are no longer together. Faithfulness is not necessarily understood as being monogamous. Rather, this concept is related to the notion of protecting the 'main' sexual partner from the knowledge that one is being unfaithful. "One-night stands" may extend beyond a single sexual encounter, but are not considered to be anything more than informal arrangements oriented around sex.
- The 2009 NCS assessed beliefs on how HIV infection can be prevented and found that only 39% have the belief that 'one sexual partner only' will prevent HIV infection.

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<sup>37</sup> Currently in 2+ relationships: 29.0% (self-completed) vs. 20.1% (face-to-face); 2+ partners in the last month: 15.1% (self-completed) vs. 8.0% (face-to-face) (2003 survey data, McGrath et al., 2009).

Multiple and concurrent sexual partnerships are sometimes openly practiced, but mostly tacitly approved, within the South African sexual and relationship culture. South Africa falls – according to Leclerc-Madlala (2008)<sup>38</sup> – within the ethnographic ‘cattle complex cultural zone’ which was traditionally polygamous, patrilineal and patrilocal, with large bride-wealth conferring large degree of jural rights over women and children. Many socio-cultural norms and values that support this system still persist, and sexual concurrency has cultural resonance and is tacitly acknowledged and accepted. Today’s multiple concurrent partnerships are essentially a modified form of polygyny.

### **Nature and scope of current HIV prevention response to modulate this aspect of sexual and relationship culture**

Within the HIV policy framework, multiple partnering & sexual concurrency are present as a theme in the intervention package on messages defined in the NSP 2007-2011.<sup>39</sup> Programmatically, this behavioural driver has increasingly been addressed in recent years. Recommendations in South African survey reports (2005 HSRC survey, 2006 NCS) and from the SADC/UNAIDS 2006 Think Tank lead to a first focus on concurrency in the 2007 Soul City series 8, which questioned the beliefs that encourage concurrent partners. In 2009, the large “OneLove” communication campaign was launched by Soul City and its partners with the main aim to reduce multiple concurrent partners (MCP) in order to critically contribute to HIV incidence reduction<sup>40</sup> - mass media was the main form of communication channel used. Other smaller campaigns were also initiated, included the *Scrutinize* campaign and Khomanani.

The 2009 NCS also examined the effectiveness of 11 South African HIV/AIDS communication programmes including those addressing multiple and concurrent partners, which were less than a year old when the survey was conducted. The 2009 NCS found that there has been a marked increase in the knowledge levels of the risks of multiple concurrent partners from 26.0% in 2006 (first NCS) to 39.1% in 2009 (Scalway, 2010). Among the women exposed to nine or more communication programmes, 11.3% reported having fewer sexual partners than in the previous year, compared to 1.9% of women with no exposure to these programmes. Having watched the *Scrutinize* advert<sup>41</sup> on the acute infection period – measured through the recall of *Scrutinize* ads – was linked to a small improvement of reported faithfulness to one partner (48% versus 43%). Overall, 25% of those who understood the ad had multiple and concurrent partners, compared to 32% among those that did not understand this particular TV ad. However, in the absence of a biomarker to validate self-reports of changed sexual behaviour, it cannot be concluded that these programmes were effective at reducing HIV incidence or HIV transmission, but they had a positive effect on knowledge, reported sexual partner numbers and reported faithfulness.

While communication programmes about multiple and concurrent partners and the cultural beliefs and practices that sustain them, are recent, condoms for HIV prevention have been promoted more than 12 years (Van Zyl, 2010).

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<sup>38</sup> “Refocusing HIV prevention to address real issues”. Presentation by S. Leclerc-Madlala, Swaziland partnership forum on HIV/AIDS, Ezulwini, 7 May 2008.

<sup>39</sup> NSP p99: HIV prevention programmes, interventions and curricula may include some or all of the following and should be customised to different targeted groups: Abstinence, especially delaying first sex; safer sex practices; information about HIV risk of different sexual practices; decreasing sexual partner numbers, including risks of more than one partner at a time (concurrency); gender relations and gender- based violence; coercive sex; intergenerational sex; male and female condom use; STI recognition and management; VCT; pregnancy testing; contraception and fertility choices; alcohol and substance use.

<sup>40</sup> Partners of Soul City’s OneLove: SABC, Love Life, Johns Hopkins Health and Education in South Africa (‘Scrutinize MCP’ advert), Discovery Health, and Society for Family Health

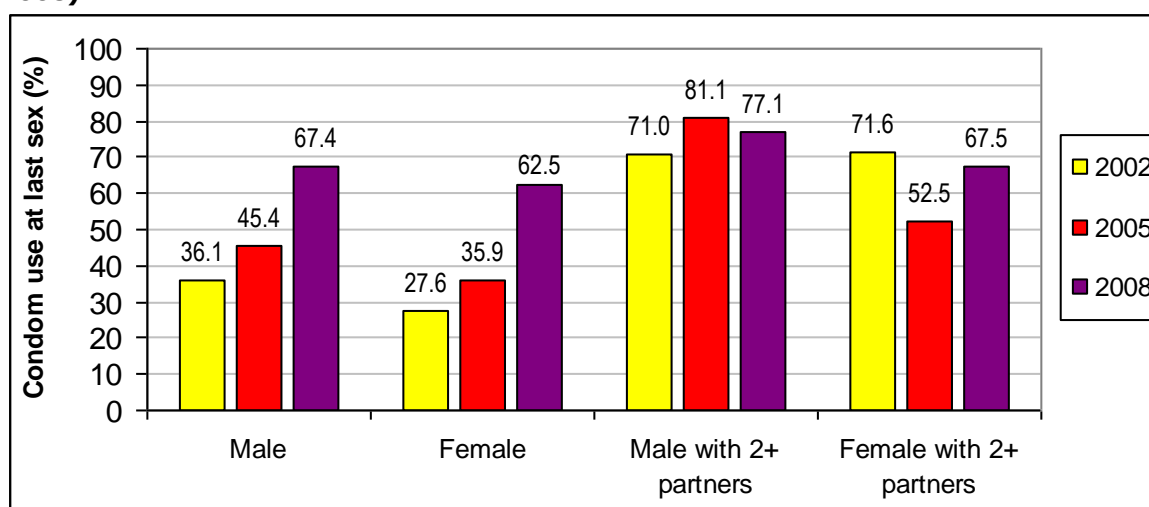
<sup>41</sup> The “Scrutinize” campaign is targeted at people aged 18 to 32. Based on research on drivers of the epidemic and previous behaviour change programmes, JHHESA commissioned a private-sector company that specialises in marketing corporate social responsibility initiatives, to create the seven ‘ani-merts’, or animated commercials, that make up the mass media element of the campaign. See <http://www.scrutinize.org.za/H.I.VICTORY/>

#### 4.2.2 Low levels of consistent condom use

Condoms are an essential commodity for preventing HIV and STI infection and unwanted pregnancy and their use is usually assessed in sexual behaviour studies.

On the positive side, reported condom use at last sex by South African adults aged 15-49 years has gone up from 31% in 2002 to 40% in 2005 and to 65% in 2009 (Shisana *et al.*, 2009). This increase applies to both male and female adults – see Figure 9. Among people reporting 2+ partners in the past 12 months, there may have been an increase in females between 2005 and 2008, but not in males.

**Figure 9. Condom use at last sex by respondents aged 15-49 years, South Africa (2002, 2005, 2008)**



Source: Shisana *et al.* (2009), tables 3.17 and 3.19.

In South Africa, condom use with casual partners amongst the youth has increased, but condom use amongst adults aged 25 or older, and condom use in long-term relationships is low.

There is, however, figures of self-reported condom use needs to be treated with some circumspection. There is evidence that condom use may be over-reported by survey participants. Gafos *et al.* (2010) used longitudinal data from clinic questionnaires in KwaZulu-Natal to approximate the proportion of women who reported consistent condom use over a year. When these data were combined with qualitative data and with “biomarker events” (HIV or STI diagnosis or pregnancy), **it was estimated that the true level of consistent condom use was about 25%; half the self-report level** (and given that the absence of a biomarker was not proof of condom use, the 25% may be a maximum). This is corroborated by 2004 data from the national youth survey: 50% of sexually active youth reporting condom use at last sex, but only 33% reporting *consistent* condom use in the past 12 months (Pettifor *et al.*, 2004). In Zimbabwe, 48% of women who reported in a survey that they did not have unprotected sex in the past two days, tested positive for a test (prostate-specific antigen test) that is a biomarker for recent sexual activity.

Although **reported condom use** has greatly increased in South Africa, it is **still insufficient in certain partnerships and situations, and has further potential to reduce transmission if more widely and consistently used**. Available data indicated that condom use is low in partnerships characterised by long term concurrency (e.g. Youm & Paik, 2004; Kelly et al 2003, Shisana et al., 2005). Among people reporting two or more partners in the last 12 months, 23% of men and 32% of women said that they had not used a condom at last sex (2008 data, Shisana et al., 2009). There is evidence that older people are far less likely to use condoms consistently than

youth do (Kincaid & Parker, 2008): only 41% of adults 25 and older report using a condom at last sex with a partner who was not a married, cohabiting or main partner.

Kenyon *et al.* (2009) found in the Cape Area Panel Study that being faithful has shifted in meaning from having only one partner, to the idea that **using condoms with secondary partners is sufficient for considering oneself to be faithful:**

*"I don't use a condom with my regular partner because I know that I'm faithful, but with anyone else I do, or else she can go because my need for her is not that much [...] To us faithfulness is about using a condom on other partners"* (young male, Cape Town).

While young singles (not married or cohabiting) and young people with multiple sexual partners are most likely to report using condoms, people above 50 and married people are least likely to report condom use. The larger the age gap in relationships, the less likely condoms are used. Furthermore, alcohol and drug use are well known to impair condom use.

Data from the 2005 survey suggest that **PLHIV who know their HIV status are significantly more likely to use a condom than PLHIV not knowing their status.** This is an important finding as condom use in this instance is more likely to actually prevent the transmission of virus, and shows effective application of "prevention for positives" and "positive living" concepts. Unfortunately, many sexual behaviour studies don't focus on *consistent* condom use.

### **Nature and scope of current HIV prevention response to modulate this aspect of sexual and relationship culture**

Condoms are an element in several of South Africa's policies and guidelines, and are part of all six intervention packages defined by the NSP 2007-2011. The review was not able to assess whether condom use is sufficiently strongly promoted within the expanded PMTCT programme in order to prevent new infections in pregnancy and post-partum both in the women and her partner (incidence data suggest very high HIV infection rates in the women [Rehle *et al.*, 2007] and her partner). The policy stance on condom distribution has attracted particular attention and some controversy relating to three target groups: Pupils, young adolescents, and prisoners.

- **Pupils** - Condom distribution in schools is governed by the *South African Schools Act* (1996), which states that the ultimate governance of every public school is vested in its School Governing Body consisting of parents, educators, and learners. The *Children's Act* allows individual schools to decide whether to distribute condoms to learners 12 and over. The HSRC policy review (HSRC, 2011) found confusion over condom distribution at schools. Given that a Minister of Basic Education has repeatedly opposed to condom distribution in schools and supported instruction in sexual abstinence, there was a perception that the minister's preferences reflects official policy. There is therefore a lack of a clear policy stance on condom distribution in schools, and the general lack of awareness that condom distribution in schools is determined by school governing boards.
- **Young adolescents** - Since 2006, no person may refuse to sell condoms to a child over age 12 (*Children's Act 38* of 2005). Also, contraceptives other than condoms may be provided without parent or caregiver consent, provided that the child undergoes a medical examination and receives proper medical advice.
- **Prisoners** - Condom distribution in prisons is, according to the Department of Correctional Services (DCS) policy, "on the same basis as condoms are provided in the country", given that the prisoners participate in counselling and education programmes before receiving condoms. In

addition, a 2006 court ruling mandated DCS to adopt a comprehensive HIV&AIDS plan for prisons throughout South Africa including access to ARVs, health facilities, and regular counselling. In October 2007, DCS finalized its *National Framework for the Implementation of Comprehensive HIV&AIDS Programmes for Offenders and Personnel*,<sup>42</sup> however, the HSRC policy review (HSRC, 2011) indicated that the framework had not been fully implemented.

The NDOH operates a **large, free condom distribution programme**. In 2008, 283 million male condoms and 4.3 million female condoms were distributed (KYR review, 2010). This compares well to the 2007 distribution (256 million male condoms) but is down from the 2006 level (376 million). The average number of condoms distributed in SA was 11.8 per man in 2007/08<sup>43</sup>. Female condoms are a much more expensive commodity<sup>44</sup> and are available primarily in family planning settings. Accessibility of female condoms is therefore very limited, despite acknowledgement of a greater need (LoveLife, 2009 - A gauge of HIV prevention in South Africa, 2009). While male condoms were generally accessible, they were not available enough to the groups that needed them the most. For instance, condom availability for MSM was inadequate (Rispel and Metcalf, 2009). The DOH tries to remedy this problem through partnerships such as with the Society for Family Health, in order to boost distribution of the free Choice branded condom through non-traditional outlets especially in high transmission areas.

The **geographic variation in the distribution rate of male condoms** in 2007/2008 is shown in Figure 3. It varied from 55.2 condoms per man per year in Cape Town, which for a number of years has by far been the best served district in the country, to 1.7 in Kgalagadi district. The next lowest condom distribution rates in the country were in Motheo (FS) with a rate of 4.1 and Sedibeng (GP) with a rate of 4.6. Mopani (LP) had the second highest distribution rate in South Africa at 17.3 condoms per man per year (Stevens, 2009).

Taking into account the estimated density of PLHIV per district (see map in Figure 10) and the fact that people who live in high HIV prevalence areas being more likely to get infected, the national programme's free condom distribution in 2007/2008 seems **poorly correlated with the evidence of where the HIV burden is located within the country**. For instance, the densely-populated metropolitan areas of eThekweni (Durban) and Nelson Mandela (Port Elizabeth) appears not to obtain a fair share of the free condoms, despite their very high density of PLHIV.

In South Africa, sexually active people are offered an alternative to free condoms via **differently priced and positioned condom brands from the subsidised social marketing sector** (e.g. Lovers Plus, Trust) and the for-profit commercial sector. The Care female condom is also socially marketed, but the KYR review identified a strongly felt need of an overall strategy for female condom distribution for the country. Regarding condoms in workplaces, great strides have been made with public-private partnerships in increasing condom availability. Between January 2008 and December 2009, SABCOHA in partnership with the Department of Health distributed 14.6 million condoms to workplaces.

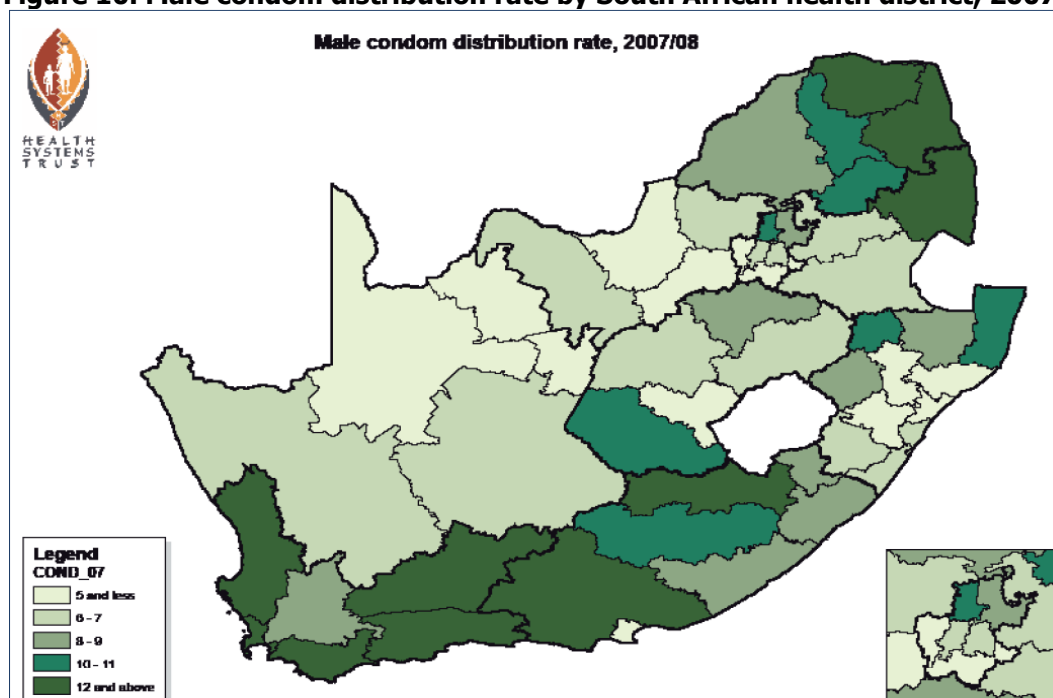
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<sup>42</sup> The HPI team was unable to obtain a copy of the framework for review.

<sup>43</sup> Stevens M (2009) District health barometer. Health Systems Trust: Durban

<sup>44</sup> Female condom costs are about thirty times higher than male condoms (KYR review, HSRC 2010)

Figure 10. Male condom distribution rate by South African health district, 2007/08



Source: Stevens (2009) District health barometer. HST

NCS 2009 data suggest that there is a positive association between several different **HIV communication programmes and reported condom use**, frequently following a 'dose-response' pattern – the more programme exposure, the higher self-reported condom use (Scalway et al., 2010). Hence, reported condom use increased in a linear fashion from 34% among those with no exposure to these communication programmes to 50% for those exposed to 9-11 programmes. Some programme specific outcomes were:

- **"Scrutinize" programme:** People were 5.6% more likely to report using a condom in the last 12 months if they had been exposed to Scrutinize.
- **"Siyayinqoba Beat It!" programme:** Some 55% of the population with high exposure to this programme reported using a condom at last sex to prevent HIV, compared to only 33% of people who had low or no exposure to the programme
- **"Khomanani" programme:** More young people who were highly exposed to Khomanani knew that condoms could be used to prevent HIV (89%) compared with those who had low exposure (84%) and those who were unexposed (77%).
- **"OneLove" campaign:** Those exposed to campaign elements were 17% more likely to report condom use as compared to those not exposed.
- **Tsha Tsha programme:** A study in 2005 showed that being exposed to Tsha Tsha was also associated with 9% greater reported condom use at last sex.

These evaluation results show positive effects of the programmes on self-reported condom use. However, in the absence of a biological marker (such as prostate specific antigen<sup>45</sup>) indicating unprotected sex in the past two days, it is impossible to know whether reported condom use reflected actual condom use. With reported condom use highest in young singles and youth

<sup>45</sup> Prostate Specific Antigen (PSA) is a biomarker for recent exposure to semen and can be used in order to validate reports of condom use and sexual activity. Minnis *et al.* (2009) used PSA in Zimbabwean women and found that 36% of the participants who tested positive for PSA reported condom-protected sex only, demonstrating the poor validity of self-reported condom use.

reporting multiple partners, it is likely that condoms have contributed to the decline in HIV incidence in youth in the late 2000s. Hallett et al. (2007) demonstrated in a modelling study that condom use in age-disparate sexual relationships could have a particularly large effect on HIV incidence among young women. However, empirical data to validate these modeling results were not available.

### **4.2.3 Transactional and commercial sex: acceptance of 'sex as commodity'**

Transactional sex (the exchange of money, goods or services) occurs in different types of sexual relationships among South African people. While giving gifts is part of courtship in many cultures, the giving in transactional relationships is more directly linked to exchange of sexual favours, and it is especially frequent in sexual relationships in which there is a large differential between the partners in terms of wealth, age or status.

*"I've had relationships mostly with people in employment. Some have been older than me... I do get choosy but money tends to make you overlook all faults."* 25-year old male from Eastern Cape (Parker et al., 2007, p34)

In South African surveys, **2%-52% of females and 4%-30% of males report transactional sex experiences** (KYR review, 2011). Research in a number of sub-Saharan African contexts has conclusively demonstrated that exchange of sex for material resources is common practice, and that the vast majority of women who engage in such transactions do not self-identify as sex workers (e.g. Hunter, 2002; Leclerc-Madlala, 2003; Luke, 2003; MacPhail & Campbell, 2001; Wojcicki & Malala, 2001; Wood & Jewkes, 2001). Transactional sex is part of a cluster of closely related violent and controlling practices, and may often be motivated by ideas of sexual conquest as much as sexual desire (Dunkle et al., 2007).

Transactional sex and commercial sex represent a continuum, many women who do not self-identify as sex workers are in fact earning their living from paid sex. Paying for sex with a sex worker is a behaviour which may not be reported accurately, especially by married people. In the 2005 HSRC survey, about 2% of men reported ever having paid for sex. Having had sex with a sex worker almost tripled men's odds for HIV infection.<sup>46</sup> Three recent **bio-surveys in sex workers reported HIV prevalence levels of around 60%**, but infection levels in white and coloured SW were reported to be much lower, just below 20%. The HIV prevalence differential between sex workers and the general population confirms that sex workers contribute disproportionately to HIV transmission in South Africa. In the MoT/HIV incidence modelling study, it was estimated that there are about 132,000 FSWs in South Africa, and **that up to 20% of all new infections in 2010 were sex-work related** (SW: 5.5%, SW clients: 11.5%, Partners of SW clients: 2.8%).

**Sex work in South Africa is illegal and criminalized.** Female sex work is linked to alcohol and drug use to help solicit clients, overcome shyness, and cope with stress and violence from clients, partners and the police (Campbell, 2003; Wechsberg et al., 2005). Male sex workers with same-sex contacts encounter multiple risks including violence, unsafe practices under the influence of substances, as well as discrimination. Sex workers have difficulties accessing health, social, police, legal and financial services.

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<sup>46</sup> In the multivariate analysis of 2008 HSRC survey data, men who reported having had sex with a sex worker were significantly more likely to be HIV positive (adjusted Odds Ratio =2.9).

## Nature and scope of current HIV prevention response to modulate this aspect of sexual and relationship culture

Transactional sex has been an element of several mass media campaigns:

- The 2001-2004 Khomanani HIV/AIDS campaigns aired over 200 television spots and over 900 radio spots targeted at young people using Hip Hop artist Eminem which discouraged transactional and age-disparate sex. The television spots reached 64% of 16-18 year olds.
- The campaign "Youth – our time, our choice, our future" targeted youth aged 12-15 to delay sexual onset and warn of abusive and transactional sex. "I choose to wait", "I'm not for sale". Activities included mass media communication, social mobilisation via road shows in all provinces, print and press.
- The "OneLove" campaign by Soul City and partners focused on risky relationships including transactional and inter-generational sex. "LoveLife" used radio PSAs entitled "Make Your Move" in 11 languages. A young future focused girl narrates: *"I just found out my mother is a sex slave. Well, what do you call someone who earns R80 a day and some on the side sleeping with men she doesn't know. Then she drinks to forget it. So, could you raise a family on R2000 a month? I blame her boss and those men who use her and call her a whore. Now she tells me my gran and my gran's mom did the same just to put food on the table. She looks at me as though it will be my life too; well, it won't I'm in school, no booze, no drugs, no sex, no babies for me yet. I'm working for a bursary, and if I don't, I'll work without pay until someone notices me. I've got talent and drive. The guys think I'm hot too. They try to make moves on me, but I'm moving up."*

There has been less explicit messaging on commercial sex and the risks of intercourse with a sex worker. The illegality of sex work poses a barrier to the launching of sex work interventions by government - it is assumed that as few as 5% of sex workers are reached with HIV interventions per year with no public sector programme and only a few NGOs reach out to sex workers (aids2031, 2010). There is no surveillance system operating for tracking HIV prevalence in sex workers. The HSRC policy review confirmed the inadequacy of targeting of sex workers (USAID-HPI, 2011). The approach of the 2010 FIFA World Cup heightened attention to commercial sex<sup>47</sup>, but no reform has been instituted as yet. According to Gardner (2009), sex work has proliferated in South Africa over the last decade despite the industry's criminal status.

### 4.2.4 Low levels and late age of marriage

Four countries (Botswana, Swaziland, South Africa and Namibia) with very high HIV prevalence levels also have the highest median age at first marriage of all countries globally for which such data exists in DHS surveys – and has been increasing, especially amongst women in South Africa<sup>48</sup>.

Social research in Agincourt found that late marriage was perceived as positive by male and female respondents, primarily for economic reasons including the freedom to cease job opportunities, spending time in stable employment and gaining financial independence by women (Zwang & Garenne, 2008)<sup>49</sup>. Late marriage means long periods of pre-marital, often non-committal sexual

<sup>47</sup> In August 2009, SANAC established the Intersectoral Working Group on Sex Work, which recommended that SANAC adopt an official position of support for the decriminalization of sex work at its November 2009 plenary and work towards rapid reform.

<sup>48</sup> Budlender *et al.* (2004) highlight the challenges of collecting and interpreting data regarding marital status in South Africa, resulting from the cultural and religious diversity in the forms of marriage, as well as the language issues around translation of questionnaires. The authors also highlight that changes in legislation in 1998 with the passing of the Recognition of Customary Marriage Act, giving new legal status to customary marriages, may affect perceptions differently from before.

<sup>49</sup> Zwang J & Garenne M (2008). Social context of premarital fertility in rural South-Africa. *Afr J Reprod Health*. 12(2):98-110. <http://www.bioline.org.br/pdf?rh08026>



relationships which put people at risk of partner change and infection with HIV and other STIs – for the less than 50% of the population that do get married (compare this to India, where over 90% of the population eventually marry).

These countries also have low levels of marriage (less than 25% of Swazi men ever get married, and in South Africa, in 2003, **54%** of women aged 15-49 years had never married, and **56%** of men aged 15-59 years had never married (SADHS 2003).

The tradition of large bride wealth (or *lobola*) is linked to late marriage patterns (see below), since marriage is often postponed until *lobola* can be paid. Some marriage practices, such as *lobola*, could also inadvertently increase the age gap between sexual partners and thereby increase the risk that an HIV-positive and HIV-negative person were in a long-term relationship. One consequence of *lobola* is also the large age gaps in marital relationships (Ott et al., 2011, KwaZulu-Natal data).

Coital frequency is highest in people aged 25-49 years and in those married and those cohabiting (according to the NCS 2009, four out of five adults aged 25-55 years report sexual activity in the past year, and of those, only 39% report being married; 12% report cohabitation with their primary sexual partner, while another 33% report having a main partner to whom they are neither married or with whom they are neither cohabiting).

Yet, the South African population-based data show that **marriage has a HIV-protective effect**: In 2008, married women were less likely to be HIV positive than unmarried women (HSRC data, multivariate analysis).

#### **Nature and scope of current HIV prevention response to modulate this aspect of sexual and relationship culture**

No government initiative or intervention could be found addressing the late marriage trend, for instance to make it easier or more attractive to get married (loans, tax-reliefs, etc). Based on data on the large spousal age gaps in KwaZulu-Natal, Ott et al. (2011) suggest that interventions to decrease age-gaps in spousal relationships e.g. by decreasing *lobola* requirements, may be effective in reducing HIV incidence, but such programmes are not in place.

#### **4.2.5 Long postpartum abstinence**

Another co-factor to the epidemic is the exceptionally long postpartum abstinence among black South African women, which was at 8.2 months in 2003, while it was at 1.9 months among Indian and white women, and 3.3 months among coloured women. Naidoo (2008) reported from North West Province that there is a belief about the harm that is caused to children if the mother is sexually active while breast-feeding. In South Africa, postpartum abstinence often coincides with geographical separation of the couples due to the cultural practice of child delivery at the women's ancestral home and the mother remaining there for a period of time after the birth. The length of postpartum abstinence is a concern in the context of hyperendemic HIV. There is evidence from West Africa and Zambia that **long-term postpartum abstinence can lead to secondary partners** (Ali *et al.*, 2001; Cleland *et al.*, 1999; Kwatu 2008), and in Cameroon, a strong association between prolonged female postpartum abstinence and HIV status was found (Glynn *et al.*, 2001).

## Nature and scope of current HIV prevention response to modulate this aspect of sexual and relationship culture

No government intervention could be identified which creates awareness about the potential risks of prolonged postpartum abstinence. It is possible that the topic is covered in premarital counselling sessions by religious and traditional leaders.

### 4.2.6 Unprotected anal intercourse

Anal sex is taboo in many cultures, and it is likely that accurate reporting in surveys is affected by the view that anal sex is an inappropriate and taboo practice. Qualitative research data from rural KwaZulu-Natal by Ndinda *et al.* (2008) suggest anal sex is perceived as being rare in the general population, and that it is felt to be unacceptable. Respondents linked anal sex to socially marginal groups (MSM, prisoners), and relationships with highly asymmetrical power relations. Other sources present various reasons for which anal sex is sometimes practiced in South Africa: During menstruation (Ndinda *et al.*, 2008), to avoid pregnancy, to avoid STIs, to preserve a girls' virginity (Weiss *et al.*, 2000), and for sexual variety and satisfaction (Ramjee & Gouws, 2002). Berkowitz<sup>50</sup> reports for KwaZulu-Natal that "young girls are opting for anal sex rather than lose their virginity". Data from the 2003 youth survey showed that among all sexually experienced youth, 5.5% of men and 5.3% of women reported ever engaging in anal intercourse; consistent with recent data from Kenya about the prevalence of this sexual behaviour.

In a meta-analysis of data, Boily *et al.* (2009) found an estimate for the transmission risk of receptive anal intercourse of 1.7% per act (95% confidence interval 0.3% – 8.9%). Anal sex increases the likelihood of HIV infection in men and possibly in women. **Local research found that sexually active men reporting anal intercourse were nearly twice as likely to be HIV infected as men reporting only vaginal sex** (OR 1.7, 95%CI 1.0–3.0) (Lane *et al.*, 2006). Higher HIV levels have also been found in sex workers in South Africa who had anal sex with their clients (61% versus 43%, Abdool Karim & Ramjee, 1998). Among men aged 15-26 years in the rural Eastern Cape, 3.6% reported sexual contact with a man, and these men were significantly more likely to be HIV-positive (Jewkes *et al.*, 2006).

Several studies on **men having sex with men** (MSM) have reported high rates of UAI. Forty-six percent of the Johannesburg/ eThekweni Men's Study (JEMS) participants reported having had UAI in the past 12 months; **30% reported UAI with someone with an unknown HIV status**; and 4% reporting UAI with someone HIV-positive in the past 12 months (Rispel *et al.*, 2009). Compared to HIV-negative participants, HIV-positive participants were significantly more likely to have had UAI (58% vs. 39%). HIV-positive participants were also significantly more likely to have had UAI with someone who they knew to be HIV-positive in the past 12 months (22% vs 8.7%), suggesting that there may be some degree of sero-sorting (choosing sexual partners with the same HIV status as oneself).

**The multi-country iPrEx study of pre-exposure prophylaxis (PrEP)** in men and transgender women who have sex with men<sup>51</sup> reported 44% fewer new HIV infections in the treatment group compared to the placebo group ( $p=0.005$ ), and 74% fewer new infections among those reporting taking 90% or more of their treatment doses (Grant *et al.*, 2010). No-one in the trial acquired HIV with a drug level that would have been expected with daily dosing. The study also found greater efficacy in those reporting UAI at screening, the subgroup with the highest HIV incidence in the

<sup>50</sup> "Virginity testing in South Africa", accessed 18 February 2011 on <http://www.slideshare.net/EricaMouse/final-ant39-virginity-testing-south-africa>

<sup>51</sup> Double-blinded randomised placebo-controlled trial testing daily oral Truvada (emtricitabine and tenofovir) over an average of 14 months, in six countries including South Africa (Cape Town)

placebo arm. All subjects received HIV testing, risk-reduction counseling, condoms, and management of STIs, which may have impacted the efficacy level of the treatment. At 24 weeks of follow-up, there were small but significant decreases in bone mineral density in the treatment group, suggesting an effect of FTC/TDF on bone mass (Mulligan et al., 2011<sup>52</sup>). The optimum PrEP regimen has not been established, and possibly drug toxicity as well as drug resistance are being researched. A follow-up open label study is underway, which also hopes to learn more about treatment compliance.

The UNAIDS HIV incidence model ('MoT model')<sup>53</sup> estimated an annual HIV incidence of 9.9% in MSM and 3.6% in female partners of MSM, but as long as there is poor understanding of the size of the MSM population in South Africa, it is difficult to provide good estimates. Data on the traditional Most at Risk Populations including MSM are not routinely collected (KYR review by HSRC).

The Soweto-based study on men with anal sex experience by Lane *et al.* (2009) also showed the link to the female population with 64% of the participating men reporting a regular female partner and 46% reporting unprotected sex with a female.

**Male-to-male sex is sometimes transactional and may then be even riskier.** Among JEMS participants, 29% reporting having *given* a man money, goods or favours, and 43% having *received* such in exchange for sex in the past 12 months. In the MSM study in Pretoria by Tun *et al.* (2010), MSM who engaged in transactional sex had a higher risk profile including UAI, multiple partners and forced sex.

### **Nature and scope of current HIV prevention response to modulate this aspect of sexual and relationship culture**

Same sex practices are legal in South Africa, thus permitting MSM to access services to reduce their risk of HIV infection. There are no public MSM programmes in South Africa, and very few NGO services (CEGAA, 2010 p65). *OUT-LGBT Well-being* is a dedicated and designated NGO that was formed 14 years ago to build healthy empowered lesbian, gay, bisexual, transgender and intersex (LGBTI) communities in South Africa. Their goal is to reduce heterosexist and homophobic attitudes in society and work towards LGBTI's physical and mental health and rights. Amongst many other services that OUT offers, they also provide direct health services to LGBTI clients, which includes targeted HIV prevention. OUT runs a full functioning clinic that provides holistic ARV treatment and care, nutrition and access to barrier methods.

Despite the absence of policies addressing the needs of MSM in relation to sexuality and sexual behaviour, the NSP 2007-2011 acknowledges that MSM are an at-risk population. The KYR review found that there is still stigma associated with the gay population and MSM, making it difficult for them to access services. Some review participants reported that their PACs or District AIDS Councils (DACs) include gay and lesbian representatives. According to Tun *et al.* (2010), many MSM are not informing HIV counsellors about their same sex behaviours, and are not seeking STI care or are not telling health providers about having had anal sex when they do seek care. The policy review by HPI in 2010 concluded that there is inadequate targeting of MSM in South Africa.

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<sup>52</sup> "Effects of FTC/TDF on Bone Mineral Density in Seronegative Men from 4 Continents: DEXA Results of the Global iPrEx Study", Paper # 94LB, CROI 2011. <http://www.retroconference.org/2011/Abstracts/42550.htm>

<sup>53</sup> This model was run as part of the KYE process. It also estimated that there are about 423,000 MSM in South Africa (3.2% of the male population aged 15-49), that about 127,000 MSM are HIV-positive, that there are about 29,000 new HIV infections annually among MSM which is about 8% of all annual new HIV infections in adults (SACEMA, 2010).

#### 4.2.7 Vast majority of PLHIV do not know that they are HIV positive

Theoretically, knowledge of HIV status enables the health care profession to support those who are HIV positive, and help them modulate any higher risk sexual behaviour that would put their sexual partners at risk of HIV infection. In South Africa, in the 2005 HIV prevalence and behavioural survey by the HSRC, 64% of all survey participants testing HIV positive had never before had an HIV test and therefore did not know about their positive sero-status. However, even once HIV status is known (see two study results below), higher risk sexual behaviour continue to take place and knowledge of HIV status should therefore not be misinterpreted as a panacea for HIV prevention.

- Eisele *et al.* (2008) collected data in Cape Town on PLHIV who were on or about to start ART. 40% of the male PLHIV and 46% of female PLHIV reported having unprotected sex their last time, regardless of ART status. The primary reason men gave for not using a condom was that they did not feel it was necessary, while the primary reason cited by women was partner refusal of condoms.
- Shuper *et al.* (2008) found that 45% of ART patients in KwaZulu-Natal reported unprotected sex during the past four weeks. Factors associated with unprotected sex differed greatly between female PLHIV<sup>54</sup> and male PLHIV<sup>55</sup>.

The 2005 national survey somewhat contradicts the results from these two studies. It points out that PLHIV who knew about their HIV status were significantly more likely to report using a condom with their partner (66%) than PLHIV who did not know their HIV status (26%) (Shisana *et al.*, 2005).

#### Nature and scope of current HIV prevention response to find and support HIV positive persons

a) The policy framework for HCT is strong:

- **The South Africa Children's Act** (passed in 2005) lowered the age of consent for HIV testing (and contraceptives) to age 12, effectively opening up access to full sexual and reproductive health care for adolescents in a country where an estimated 11% of young males and 6% of young females report having started sex before the age of 15.
- **The 2010 HCT guidelines** released by NDOH in February 2010 obligate health care providers to offer HIV counselling and testing to all patients visiting a health facility for any ailment, within a legal and human rights framework. The implementation of rapid HIV testing has led to the adoption of new approaches to HCT, such as client- and provider-initiated counselling and testing, and new standards for children and pregnant women. The new guidelines address these changes, provide a framework for all HCT models implemented in the country, and draw from international standards on HCT, including those developed by the World Health Organisation and the US Centers for Disease Control and Prevention.

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<sup>54</sup> Females: unprotected sex was associated with unemployment, negative condom attitudes, weaker condom use norms, weaker condom use intentions, lower behavioural skills, lower HIV stigma, lower perceived power, being threatened with physical violence, and experiencing physical violence (Shuper *et al.*, 2008).

<sup>55</sup> Males: unprotected sex was associated with lower education, lower HIV-related knowledge, negative condom attitudes, alcohol before sex, recent clinical STI treatment, and having a partner who was trying to conceive.

- These guidelines also link with the **2010 ARV treatment guidelines** which increase access to treatment in certain population groups.<sup>56</sup>

b) Historically, the proportion of adults reporting in surveys to have undergone HIV testing has varied by location, gender and age group. The KYE review found, based on 2008 data, that there was an imbalance between provinces between recent HIV testing efforts and burden of HIV – comparatively large HIV counselling and testing (HCT) efforts in Western Cape despite relatively small HIV burden, and a similar situation in Northern Cape and Eastern Cape, and an above-average HCT effort in Gauteng. In contrast, KZN lacked HCT effort given its very large HIV burden, and to a lesser extent, Free State and Mpumalanga as well. With the scaling up of PMTCT, more women than men have benefitted from HCT and this has not only lead to higher testing prevalence in women compared to men, but also higher ART prevalence in women<sup>57</sup>.

c) In April 2010, the Government launched a **national counselling and testing campaign** for HIV and other conditions.<sup>58</sup> The campaign target is to counsel and test for HIV 15 million South Africans by June 2011 at any of the country's 4,300 health facilities. By end of January 2011, about 6.93 million people had been tested for HIV (almost 70% of the campaign target). The campaign also achieved other important health aims, since it is a multi-disease screening campaign (screening for non communicable disease such as hypertension and anaemia was also done). Parliament has approved the proposal by the Health Department to take the campaign to young people at high school level, and a policy for school-based HIV testing is being developed.<sup>59</sup> This approval involves a total of about 6,000 high schools with some 12 million learners, but only schools that meet certain "readiness" criteria will carry out the HCT.

d) The services offered at HCT sites are a package: HCT, treatment of common ailments, STI treatment, and condom distribution. The campaign benefits from financial and logistical private and NGO health care sector involvement, government financial backing and creative human resources recruitment. The approximately 2,000 campaign volunteers are mainly retired nurses on fast-track up-skilling to mitigate the understaffed health system (Bateman, 2010). The campaign has shown many needs for consolidation (human capacity to provide counselling and testing, physical space for these operations, etc.) but it has united numerous service providers around a shared goal. Another positive aspect of the campaign was that it helped to speed up the adoption of task-shifting strategies nationally, including allowing nurses to initiate ARVs.<sup>60</sup>

e) There are, however, challenges with the national HCT campaign:

1. A few months into the campaign, it became clear that **linkages between testing services and HIV care were poor**, therefore preventing those who test positive from getting treatment.<sup>61</sup> Of 300,000 people who tested HIV-positive up to July 2010, only half were referred to any related health services, and only an additional 3,000 people were put on ARVs in the campaign's first two months.

<sup>56</sup> Under the new guidelines for adults and adolescents, patients are eligible to start ART based on the following criteria: CD4<200 irrespective of clinical stage, or CD4<350 in patients with TB/HIV co-infection, or pregnant women, or WHO stage 4 disease irrespective of CD4 count, or patients with MDR/XDR TB irrespective of CD4 count. In addition, pregnant women, patients with CD4<100, any patient with WHO stage 4 disease, and any patient with MDR or XDR TB are fast-tracked to be initiated on lifelong ART within two weeks of receiving their CD4 result. For children, eligibility criteria to start ART are: All children under 1 year irrespective of CD4 count; Children aged 1-5 years with clinical stage 3 or 4, or a CD4 percentage of 25 or below, or with CD4<750; Children aged 5-15 years with clinical stage 3 or 4, or a CD4 count<350.

<sup>57</sup> ART prevalence in women at reproductive age will be further boosted with the new guidelines recommending starting HIV-positive women on ART within two weeks.

<sup>58</sup> Anaemia, blood glucose, hypertension and TB

<sup>59</sup> "South Africa: Schools HIV Testing Campaign Coming Soon", <http://allafrica.com/stories/201102170560.html>, accessed on 25 March, 2011.

<sup>60</sup> "National HIV testing campaign disappoints" <http://www.plusnews.org/Report.aspx?ReportId=90410>, accessed 27 March, 2011.

<sup>61</sup> "National HIV testing campaign disappoints" <http://www.plusnews.org/Report.aspx?ReportId=90410>, accessed 27 March, 2011.

2. **The campaign was expensive, and funding was a challenge:** According to one senior official, there was no proper budgetary preparation for the testing campaign, as elements such as mass media and communications were unfunded. *"There's almost no monitoring and evaluation of HIV testing... and a disconnect between the numbers of people testing and the numbers of people accessing treatment"*. The statistics also showed that about 300,000 people underwent pre-test counselling but did not get tested. Even before the national testing initiative put pressure on HIV testing services, less than 5% of the clinics surveyed complied with national VCT protocols (DoH funded rapid survey by SEAD/Strategic Evaluation, Advisory & Development health consultancy of 36 VCT providing clinics nationwide).
3. **The campaign exposed and concentrated already-existing concerns about the quality of HIV-related counselling:** There is therefore a well-founded concern about the quality of counselling nationally. This is also reflected by the findings of the HPI policy review, which identified a lack of staff, infrastructure and dedicated finance to successfully implement the CT campaign and meet the increased demand for ART.

#### 4.2.8 Low risk perception: "It won't happen to me"

The above described aspects of sexual and relationship culture (multiple and concurrent partners, low condom use, unprotected anal intercourse) and the respective responses are all interlinked with personal risk perception<sup>62</sup>. Low risk perception can be regarded as another proximate risk factor in the South African epidemic - survey data show that a relatively small proportion of the population regard themselves to be at any significant risk for HIV. In the 2009 NSC, 78% of respondents aged 16-55 years said that they would not get infected. In the 2005 HSRC survey, the 'perceived low-risk' group had a HIV prevalence of 10.1% (F12.8%, M7.5%).

### 4.3 What influences the sexual and relationship culture in South Africa

There are a number of underlying predisposing factors for South Africa's severe HIV epidemic. They were pre-existing in the 1980s when the first AIDS cases were recorded, and provided a fertile ground for the virus to get passed on rapidly within the population, and were modulators of sexual culture. These **societal (also called macro-level, structural or distal) drivers** are mostly outside the control of individuals, couples and families. Some are rooted in the cultural and social systems, others in the macro-economic systems and structures.

- a) **Migrant labour system** separating couples and moving people away from the normative, traditional community environment
- b) **Income inequality** and a very large spectrum of wealth, as well as unemployment and deprivation leading to risk taking
- c) **Gender hierarchy** and sexual and gender norms
- d) **Violence** in intimate partnerships and a culture of sexual violence
- e) **Alcohol abuse** and prevalence of heavy drinking

As the data in the next five sections (4.3.1 to 4.3.5) will show, South Africa has therefore powerful societal epidemic drivers – an entrenched circular (oscillatory) labour migration system, massive

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<sup>62</sup> Risk perception is a key dimension of most health behaviour models. The 'health belief' model explicitly theorizes that perceived risk results in behaviour change - individuals would stick to one partner at a time, if they perceived **that the risk of becoming infected with HIV outweighs the costs of fidelity** (Becker & Janz, 1987). Cognitive theory adds an extra dimension to this perspective - individuals are understood as active processors of information. Data is not just assimilated, but filtered and interpreted by the perceiver. Community norms, ideology and historical experience can all impact on how the information is processed, altered and stored (Eiser, 1986).

inequality in wealth despite redistributive tax and grant systems, high unemployment, persistent gender disparity, and exceptionally high levels of violence and alcohol consumption.

### **4.3.1 Circular migration and mobility**

There is strong evidence that circular migration and mobility have, historically, contributed to the magnitude of South Africa's HIV epidemic. This pattern of working in one place and having a main / family residence in another place impacts on the stability of relationships and family structures. Stability of couples is sometimes compromised by geographical separation chiefly due to work-related and other travel (an ongoing pattern of oscillatory migration that characterizes the socio-economic realities in southern Africa). In the 2009 NCS, for example, 16% of individuals aged 25-55 said that they live away from their primary sexual and relationship partner.

Since the early stages of the epidemic, infections in rural areas have been traced to those who had been in urban areas (Jochelson *et al.*, 1991); HIV prevalence levels have been higher along roads (Tanser *et al.* 2000; Tanser *et al.*, 2009); and truckers have been found to be at higher risk because of their greater mobility (Ramjee & Gouws, 2002). According to Hargrove (2007), **circular migration** is an essential component for an epidemic to be as severe as the one witnessed in South Africa. Also, South Africa shares its borders with six countries, all of which exhibit some of the world's highest levels of HIV prevalence. The link between migration and positive HIV status has been demonstrated by Abdool Karim *et al.* (1992 - migration increased infection risk by almost three-fold for women and seven-fold for men in KwaZulu-Natal), Zuma *et al.* (2003 - 60% higher odds of HIV infection in migrant vs. non-migrant women in the Carltonville mining area), Lurie *et al.* (2003 - migrant men from Hlabisa and Nongoma Districts in KwaZulu-Natal were 2.4 times more likely than non-migrant men to be HIV-infected), and Barnighausen *et al.* (2007 - migration was significantly associated with HIV incidence in Kwa-Zulu/Natal (adjusted Hazard Ratio migrant vs. non-migrant: 0.48). Overall, the data show that labour migration leads to risky living contexts and behaviours, with couples living apart and finding secondary partners. The data indicate that the lowest HIV rates are found among couples that remain together year round. According to a modelling study by Gebrekristos *et al.* (2005), family housing in South African mining communities could decrease HIV transmission among HIV-negative concordant couples.

#### **Nature and scope of current HIV prevention response to modulate this factor that influences the sexual and relationship culture in the country**

Recent interventions to prevent the negative HIV effects of migration have included those by IOM's Partnership on HIV and Mobility in Southern Africa (PHAMSA), which aims to reduce the HIV incidence and impact of AIDS among migrant and mobile workers and their families. The South African unions have promoted the establishment of family accommodation to mitigate some of the effects of migration. There is scope to include the theme of migration within targeted couple counselling and family wellbeing promotion. SADC has developed a draft policy framework for population mobility and communicable diseases, which aims to control the spread of communicable diseases as people cross borders.

### **4.3.2 Income inequality and unemployment**

**Income inequality and unemployment are high in South Africa and are also considered powerful drivers of the epidemic.** Wealth continues to be stratified along gender and racial lines (ICRW, 2008). Lower socio-economic status is frequently associated with higher risk behaviours, and black Africans in South Africa are much more likely to be HIV infected if they are in the lower wealth categories. The significant association between deprivation or lack of possessions and high HIV risk in South Africa is further strengthened by analyses by Kincaid & Parker (2008), Colvin *et al.*, (2007), and Dunkle *et al.* (2004).

### **Nature and scope of current HIV prevention response to modulate this factor that modulates the sexual and relationship culture in the country**

Income inequality and deprivation are addressed by the South African government through redistribution via progressive taxes and pro-poor cash transfers. The expansion of social grants over the post-apartheid period has been strongly redistributionist, and at the aggregate level, they have impacted favourably on poverty and inequality (Woolard & Leibbrandt, 2010). However, prime-age adults can only benefit from social assistance grants if they are disabled or are co-resident with a child or elderly person. There are many that argue that the social grant system should be extended to focus directly on the unemployed who remain uncovered by other grants, while others argue for a positive employment environment as the key parameter for sustainable social transformation going forward. The current government has repeatedly pledged to address unemployment via a focus on active labour market policies (e.g. through the recent launching of youth scheme) to complement the extensive system of cash transfers.

#### **4.3.3 Gender hierarchy and sexual and gender norms**

**There is a body of evidence confirming that the gender hierarchy is a key factor in the HIV epidemic.** It legitimates the control of women by men and leads to expectations of female obedience and male sexual entitlements in a patriarchal system of values and norms. Two behaviours which stem from the gender disparity are intergenerational sex and transactional sex – both based on the dominance and power of males. In young women in the Eastern Cape, an estimated 14% of new HIV infections is due to relationship power inequity (Jewkes *et al.*, 2010).

### **Nature and scope of current HIV prevention response to modulate this factor that influences the sexual and relationship culture in the country**

The principle of gender equality is enshrined as a fundamental right in the 1996 Constitution. Since 1994 there have been major advances for women in certain areas, most notably in the political and legal spheres (ICRW, 2008). The National Policy Framework for Women's Empowerment and Gender Equality aims to address some of the structural factors that prevent women from accessing needed services. By 2009, South Africa scored favourably in the global comparison of the gender gap index, chiefly due to the high educational attainment of girls, the high proportion of women in parliament and in ministerial positions, and the high percentage of professional and technical workers. However, most women are not sufficiently well resourced or educated to benefit from the "equal opportunity" legislation. At the same time, women are mindful of the factors constraining their future goals (lack of employment opportunities and access to education, corruption, low wages), and often see relationships with older men as the easiest and most natural way to acquire the means to a better life.

#### **4.3.4 Sexual and intimate partner violence**

**South Africa has the highest reported levels of sexual and intimate partner violence in the world, and violence in all its forms is considered an important epidemic driver** (Ghanotakis *et al.*, 2009 - KYR). Young people are exposed to and adopt a culture of sexual violence. HIV and violence are linked: Positive women are more likely than HIV negative women to have experienced partner physical abuse. It was estimated that 12% of incident HIV infections in young women in the Eastern Cape are directly attributable to intimate partner violence (Jewkes, *et al.*, 2010). Perpetrators of violence themselves could be seen as a vulnerable group, since many of them live in wider contexts of risk such as substance abuse. People who have been sexually abused as children are more likely to become abusers themselves. Refusing sex, inquiring about other partners, or suggesting condom use have all been described as triggers for intimate partner



violence; *yet all* are intimately connected to the behavioural cornerstones of HIV prevention (e.g. Maman *et al.*, 2000).

### **Nature and scope of current HIV prevention response to modulate this factor that modulates the sexual and relationship culture in the country**

The country has strengthened the policy context around violence and victim protection. The 1998 Domestic Violence Act broadened the definition of domestic violence to include a wide range of abuses, is applicable to a range of familial and domestic relationships and covers both heterosexual and same-sex relationships. The Criminal Law (Sexual Offences and Related Matters) Amendment Act of 2008 built on the Domestic Violence Act to include specific provisions for survivors of rape and assault, and strongly supports victim empowerment.<sup>63</sup> The law broadens the definition of rape to include forced anal/or oral sex, irrespective of the gender of the victim or the perpetrator, thus recognizing male rape. The law includes however few provisions for counselling and medical treatment, with the exception of PEP. The 2009 National Policy Guidelines for Victim Empowerment aims to improve the quality of services for victims of violent crime.<sup>64</sup> According to the HPI policy review, South Africa's safety, security, and justice system continues to fail those affected by violence, especially women, although laws addressing sexual violence have improved. The rates of conviction in sexual violence cases are low, and the failure to prevent sexual violence against women undermines HIV prevention efforts. The failures of the legislative and justice systems are compounded by cultural norms that prevent women from disclosing episodes of sexual violence. The South African Police Service estimates that only one in every 35 raped women report the rape and that most report to clinics or hospitals, not police.<sup>65</sup>

#### **4.3.5 Alcohol consumption and associated higher-risk sexual behaviour**

South Africa is among the countries with the most risky patterns of drinking<sup>66</sup>, and alcohol abuse is considered a factor strengthening those parts of the sexual and relationship culture that fuels the HIV epidemic. According to the 2011 WHO Global Status Report on Alcohol and Health, South Africa is one of the leading countries in alcohol abuse disorders, and widespread heavy episodic drinking is responsible for a range of acute consequences including unprotected sex. There is a large body of data showing that drinkers incur higher sexual risk behaviours than non-drinkers, are more likely to be HIV infected, and less likely to use HIV prevention services.

### **Nature and scope of current HIV prevention response to modulate this factor that influences the sexual and relationship culture in the country**

The current legislative framework provides the government with a basis for combating alcohol and substance abuse. The Bill of Rights enshrines the rights of all South Africans, including those abusing substances and affirms the democratic value of human dignity, equality and freedom. The National Drug Master Plan 2006 to 2011 is aligned to the stipulations of the 1992 Prevention and Treatment of Drug Dependency Act, which enables cooperation between government departments

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<sup>63</sup> For example, it repeals the common law offence of rape, replacing it with an expanded statutory offence of rape. It provides for compulsory HIV testing of alleged offenders, allowing victims of sexual assault or the investigating officer to seek a court order to compel the alleged offender to take an HIV test and disclose the results to the victim (USAID-HPI, 2011).

<sup>64</sup> The guidelines provide a regulatory framework for promoting and upholding the rights of victims, stipulate the roles and responsibilities across government departments to facilitate effective coordination of victim empowerment programmes, and offer a reference for sector-specific victim empowerment policies. The guidelines apply to anyone who is a victim of violent crime but prioritizes the following target groups: women; victims of domestic violence, sexual assault and rape; abused children, older persons and people with disabilities; victims of human trafficking and hate crimes; farm workers and dwellers; and ex-combatants (USAID-HPI, 2011).

<sup>65</sup> <http://www.rapeoutcry.co.za/resources/stats.html>

<sup>66</sup> The other countries are Russian Federation, Ukraine, Kazakhstan and Mexico, according to the 2011 World Health Organisation Global Status Report on Alcohol and Health. [http://www.who.int/substance\\_abuse/publications/global\\_alcohol\\_report/msbgsruprofiles.pdf](http://www.who.int/substance_abuse/publications/global_alcohol_report/msbgsruprofiles.pdf) (accessed 17 March, 2011).

and stakeholders in the field of substance abuse and promotes cooperation in combating the illicit supply of drugs and abuse of substances. The Prevention of and Treatment for Substance Abuse Act 1992 was enacted by Parliament in 2008 and seeks to combat substance abuse through prevention, early detention, treatment and reintegration programmes. Regulations to bring this Act into operation are being finalised. Cabinet has established an Inter-Ministerial Committee to support the national campaign to combat alcohol and substance abuse launched in October 2010 (*"No Place for Drugs in my Community"*). In 2011, the alcohol-related debate is on tighter monitoring of alcohol trading outlets, pushing up the legal drinking age from 18 to 21 years, the banning of alcohol advertisements, and law enforcement especially around taverns and 'shebeens'.

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This section summarised KYE and KYR findings on the biological factors, sexual and relationship culture and factors that influence this culture in South Africa, as well as policies and programmes to address and modulate them. In the last section of the report, recommendations are made to address this question: **"What does South Africa need to do to be more successful in HIV prevention?"**

## SECTION 5.

### RECOMMENDATIONS TO IMPROVE SUCCESS IN HIV PREVENTION

**5.1 Immediately implement a bold, national, Government-led circumcision drive to ensure that at least 80% of South African boys and men aged 10 and older are circumcised by December 2013** – this will require approx 5.5 million male circumcisions, and could avert 1 million, or 17% of all new adult infections, over the next five years.

#### Why should South Africa implement this recommendation as a core HIV prevention strategy?

- *Not implementing such a campaign is a waste of precious public health resources and efforts:* Medical male circumcision (MMC) is the only proven biomedical intervention to significantly reduce new HIV infections in male adults: HIV negative men have a 60% lower risk of becoming HIV positive. This significant protective effect of MMC is demonstrated in South Africa by both clinical trial data (Orange Farm, 61% reduction in men's HIV risk) and national HIV survey data<sup>67</sup>. The HIV protection of MMC is sustained over time – highly-significantly reduced HIV incidence in circumcised men after 54 months of observation in Kenya (Bailey et al., 2010) and in Ugandan after 10,000 person years of follow-up (Kong et al., 2011).
- *It will help avert almost a fifth of SA's new infections over the next five years:* Getting MMC to the coverage levels stipulated above will significantly contribute to South Africa's national goal of averting as many new HIV infections as fast as possible. A modelling study suggests that scale-up of MC coverage to 80% of men and neonates in South Africa over the next 5 years will avert more than 1 million new HIV infections in South Africa by 2025 (Bateman, 2010) – this is around 17% of all new adult infections (provided that current HIV incidence remains at its current level) from a single intervention, well implemented and to scale.
- *It is cost effective to implement:* A cost-effectiveness study in South Africa has shown that MMC generates large net savings after adjustment for averted HIV medical costs (Kahn et al., 2006): for 1,000 circumcisions, the net savings were US\$2.4 million. MMC is a once-off intervention with an efficacy level similar to some currently marketed vaccines for other diseases such as, for example, the human Rotavirus vaccine Rotarix™ against severe childhood diarrhea – it is the leading cause of death amongst children younger than five, claiming more than 500,000 children each year and causes the hospitalization of millions more. A study conducted in South Africa and Malawi showed that a rotavirus vaccine reduced severe rotavirus disease – by 61% –in African infants during their first year of life. Based on these and other efficacy data, the WHO SAGE on Immunization has recommended that rotavirus vaccination be included in all national immunization programs. Only SA introduced so far, main barrier seems cost (\$7.50).
- *It is possible to convince men to be circumcised:* Adult males will take up MMC if the intervention is well promoted – uptake of MMC in the former Ugandan control group of their randomized control trial is now over 80% (Kong et al., 2011). In the "Bophelo Pele" project in Orange Farm township, uptake was 39% after 23 months (from a baseline of 13% of men circumcised) (Lissouba et al., 2010). In Kenya, strong leadership, MMC/health integration,

<sup>67</sup> According to South African population-based survey data, men who reported having been circumcised before first sex were significantly less likely to be HIV-positive (HSRC 2005 data, multivariate analysis, aOR 0.53, p=0.047).

clear mandates and accountabilities, and strategic partnerships pave the way to rapid MMC scale-up and uptake.<sup>68</sup>

- *Fears about circumcision sparking a long-term increase in new infections as circumcised men increase their higher risk sexual behaviour, are unwarranted:* Data have shown that men who get circumcised, do not tend to increase their higher-risk sexual behaviour and therefore do not 'cancel' out the protective effect of male circumcision with sexual 'risk compensation' – in the Uganda trial site, no discernible risk compensation has been observed in the population in terms of partner number or condom use (Kong et al., 2011).

South Africa has begun to address MMC by developing policies and programmes. By April 2010, 18 100 MMCs were officially reported (WHO/UNAIDS, 2010). However, efforts need to be multiplied in order for MMC to help decimate the HIV epidemic in the short-term.

### How can South Africa implement this recommendation?

- Increase the supply of MMC at health facilities by using two models to scale-up of adult MMC using two different roll-out models in the provinces for maximum impact in preventing new infections at least cost:
  - a) **Emergency, multi-agency scale-up** of adult MMC in three priority provinces where an estimated 63% of new infections occur per year (Kwazulu Natal, Gauteng and Eastern Cape). Implement dedicated and fast-tracked comprehensive MC campaigns as per MC guidelines, and provide opt-out MC services in all health facilities. Engage multiple sectors by accreditation of private for-profit and not-for-profit service providers for adult MMC. All public sector facilities offer MC services. Create demand for circumcision in traditionally non-circumcising communities, and implement a pilot programme that provides different types of incentives for men to undergo circumcision, and for their female sexual partners to encourage them to go<sup>69</sup>. The following provincial targets will be needed to meet the national target of 5.5 million men circumcised by December 2013.

Province (sorted based on number of MCs needed to reach target coverage)	Current MC prevalence	Desired MC prevalence	To reach 80% coverage of HIV negative men in each province
Gauteng	25.2%	80%	2,507,000
KZN	26.8%	80%	2,300,000
Eastern Cape	32.8%	80%	884,000
Limpopo	47.5%	80%	612,000
Mpumalanga	36.3%	80%	610,000
Northwest	32.8%	80%	596,000
Northern Cape	34.1%	80%	199,000
Western Cape	67.5%	80%	196,000
FreeState	70.7%	80%	61,000
<b>TOTAL</b>		<b>80%</b>	<b>5,458,000</b>

<sup>68</sup> MMC in Kenya: Leadership and accountability mechanisms through Joint MC Inter-Ministerial Task Force, MOH, National and provincial task forces, and focal MC persons at district level. Prime Minister Odinga endorsed scale-up of MC and works with the Council of Luo Elders to promote MC. MC is fully integrated into MOH annual planning process. Multiple technical and financial partners united in MC roll-out. Source: WHO, 2010.

<sup>69</sup> A youth HCT intervention found that giving R10 cell phone vouchers was sufficient to help youth justify to their peers why they go for HCT.

- b) Priority, public sector scale-up of adult MMC in the other six provinces responsible for about 37% of new infections per year (LP, NW, MP, FS, WC and NC). Scale-up uses public sector facilities and is rolled out from higher to lower HIV prevalence settings. MC is offered routinely at all health facilities and with all health procedures.
  - c) Ensure that MMC is part of the benefit package included in the National Health Insurance scheme and thus available free of charge.
  - d) Investigate the feasibility and acceptability of opt-out circumcision at health facilities – where every man is provided
  - e) Accredit private physicians to perform circumcisions and reimburse them a standard fee per circumcision performed, in addition to making MMC available
- *Increase demand for MC services* (given that supply side is able to meet demand):
    - a) Conducting selected special studies on identified problem areas such as socio-cultural barriers to MC implementation, and fine-tune MC intervention according to research findings. Based on these findings, develop and disseminate nationally harmonized IEC materials, which contain evidence-informed key messages e.g. on unaffected sexual prowess of circumcised men, but increased penile sensitivity and enhanced ease of reaching an orgasm.<sup>70</sup>
    - b) Undertake a rapid impact evaluation to assess success rate, and if successful, initiate financial compensation for men who become circumcised so as to compensate for the loss of daily income because of going for a circumcision procedure.
    - c) Obtain endorsement of MMC through high-level meetings with traditional leaders in traditionally non-circumcising areas.
    - d) Stage communication campaigns aimed at younger men and women (encourage young women to motivate their boyfriends to be circumcised, citing other health benefits), and making circumcision 'cool.'
    - e) Involve the faith-based sector in a circumcision campaign, dispelling the myth that circumcision can change one's religion or that it is 'unChristian' to become circumcised.
  - *Whilst rapidly increasing the supply of and demand for MC services, also ensure that MMC services are of good quality by:*
    - a) Monitoring MMC implementation with a common service delivery reporting system used by all providers in a province. Monitor against provider-specific MMC targets and "red flag" providers off target (as done in the national VCT campaign)
    - b) Tracking MC prevalence in future national HIV/health surveys through careful assessment of the MC status of all male participants by using pictures and descriptions in order to ensure that MC status is accurately reported on and therefore maximize data validity.
    - c) Establishing adverse events surveillance and ensure that all men undergoing the MC procedure are registered into the surveillance system where they are required to report all complaints. Such a surveillance system serves to understand the range and prevalence of adverse effects, and informs quality improvement plans for the procedure.<sup>71</sup>

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<sup>70</sup> Concerns about sexual prowess of circumcised men are unfounded - A randomized controlled trial evaluated the question in 4456 sexually experienced adult males and found that male circumcision did not adversely affect clinically significant function or sexual satisfaction in men. These findings were confirmed in another large randomized controlled trial that found adult MC was not associated with sexual dysfunction and that circumcised men reported increased penile sensitivity and enhanced ease of reaching orgasm. Another study showed that MC had no deleterious effect on female sexual satisfaction (WHO, 2010)

<sup>71</sup> In the "Bophelo Pele" project, the rate of adverse events since the beginning of the project was 1.8%, most were due to bleeding, infections, and swelling, and 0.064% resulted in participant hospitalization.

## **5.2 Establish routine early infant male circumcision in public and private sector facilities that manage deliveries so that at least 80% of newborns receive MC before they are 2 months old, by December 2012.**

### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *It is easier and cheaper than adult MMC:* The procedure is simpler and less painful than that performed on older boys and men because the penis is less developed and the foreskin is thinner and less vascular. The wound typically does not need to be sutured. Healing is quicker with complete healing usually within 14 days, and complication rates are lower compared to adult MMC. Early infant MMC can be done at lower costs than adult MMC – a comparison in Rwanda showed that neonatal MMC was four times less expensive than adult MMC, and highly cost-effective (Binagwaho et al., 2010). Routine early infant MMC will prevent costly “catch-up” MMC campaigns in the future and eventually make them superfluous – thereby significantly saving costs in the long run.
- *Most women in South Africa deliver at health facilities anyway, so it is a golden opportunity to intervene:* According to the 2003 DHS, 83% of births in South Africa were performed in public health facilities and 6% in private health facilities.
- *It will lead to fewer new infections amongst boys and men, once these newborn males become sexually active:* In the long-run, it serves the same benefits as adult male circumcision: it will significantly contribute to South Africa’s long-term objectives of decimating the HIV epidemic.
- *It is more effective in the long-run:* Early infant MMC ensures that the wound would be healed before sexual activity begins - sexual activity can complicate circumcision in adolescents and adult males and can put older patients who engage in such activity before the wound has healed at higher risk for HIV transmission. Early infant MC ensures that the protective effect of MC against HIV and other STIs is available when sexual activity starts – in South Africa, 41% of males reported that they got circumcised after sexual debut (2002 HSRC data described by Connolly et al., 2008).
- *People in South Africa know how to do it:* There is local expertise in routine neonatal MMC due to most Muslim and Jewish babies in South Africa undergoing the procedure.
- *There are medical devices to further decrease risks and simplify the procedure:* Some of the medical devices now available for either adult or infant circumcision requires no surgery, enables task shifting for performing the procedure to a primary health clinic nurse, halves the number of persons required to perform the procedure and more than doubled the number of circumcisions that could be performed in a day (Muraguri et al, 2011).
- *It has fewer complications:* Early infant male circumcision leads to reduced risk of urinary tract infections in the first 6 months of life (these infections typically present with signs and symptoms of systemic involvement and can be associated with significant complications, including sepsis and renal scarring).

### **How can South Africa implement this recommendation?**

- *Secure regular, reliable supply of newborn MC services by:*
  - a) Developing guidelines on how to integrate early infant MMC into routine public sector maternal and child health services (integration at planning stage, in resource allocation,

implementation of ANC, ob-gyn services, as a standard post-delivery opt-out service offered to new mothers, other child and maternal health services, and during monitoring and evaluation).

- b) Developing province-specific detailed capacity-building and implementation plans with data-informed targets for early infant MMC numbers per health district and facility for each month
  - c) Training nurses and midwives in early infant MMC in public and private maternity and delivery facilities.
  - d) Offering post-delivery, safe neonatal MMC in all public maternity services to all new mothers with male newborns and encourage the private sector health facilities to offer the same service.
  - e) Implementing "mop-up" early infant MMC within post-partum consultations and when babies are taken to primary health care facilities for their 6-week immunizations so as to cater for those newborns who were not circumcised at birth because (i) they did not deliver in a health facility (approximately 7% of deliveries, DHS 2003), (ii) their mothers were not offered the option, (iii) they were not eligible for neonatal MMC (birth weight below threshold, medical contraindications), or (iv) at the time, their parents were unsure about choosing MMC post-delivery.
  - f) Conducting a study to evaluate the use of provider incentives to encourage early infant MMC.
- *Create demand for early infant MMC (once service provision is established) by:*
    - a) Promoting the service during ANC consultations;
    - b) Promoting early infant MMC as the responsible option for parents of newborn boys through public health messages targeting mothers and fathers; and
    - c) Involving the faith-based and community-based sector in such communication campaigns
  - *Whilst rapidly increasing the supply of and demand for MC services, also ensure that MMC services are of good quality by:*
    - a) Monitoring implementation against facility-specific targets through a common service delivery reporting system used by all providers, and "red flag" underperforming providers;
    - b) Tracking MC prevalence in children in future demographic and health surveys in South Africa; and
    - c) Feeding data onto the MMC adverse events surveillance system.

### **5.3 Broaden and deepen South Africa's HIV counselling and testing (HCT) efforts by expanding HIV testing mechanisms: make self-testing HIV status kits available (and promote their regular use) through public, commercial, social marketing and not-for-profit channels.**

#### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *Self-test kits work, and are acceptable:* A study in Malawi in 2010 showed that the oral self test kits were popular, accurate, and had high acceptability (100% of study participants indicated that they would recommend it to family and friends<sup>72</sup>). A rapid oral HIV test (administered at home) has potential for high uptake at community level if it can be successfully distributed, tap into latent demand, and linked to counseling and care.

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<sup>72</sup> A feasibility, accuracy and acceptability study of *oraquick* HIV self testing in Malawi found 97% participation rate and 99% test accuracy (with no impact from literacy level of the participant). 99% reported that they would very likely self test again and 100% would recommend the test to friends and family (Choko et al., 2011).

- *Currently, HIV prevention funding is spent on an HIV service (HCT) that is essential for the wider HIV response, but that does not offer empirical HIV prevention benefits or impacts for those who test negative.* While there is no unambiguous evidence that knowing one's status significantly impacts sexual behaviours, all efforts need to be made for people to be able to access HIV testing in easy and convenient ways, do repeat testing as often as they wish, and to make HIV testing a widespread, normative behaviour with long-term sustainability. Currently, less than 25% of South Africans know their HIV status. HIV testing is therefore an essential HIV service, but the service itself does not offer empirical prevention benefits to the majority of the HIV-negative population. Therefore, it is paramount that this essential HIV service is offered to as great as possible proportion of the populace without significantly impacting on HIV prevention funding.
- *Whilst it is compulsory for health care providers to provide HCT services, current implementation models are expensive and not sustainable in the long-term:* In February 2010, the NDOH released new HCT guidelines, obligating health care providers to offer HCT to all patients visiting a health facility for any ailment, within a legal and human rights framework ('opt-out' policy). The implications are major in terms of infrastructure and staff requirements and dedicated financial resources (Bateman, 2010b). The campaign monitoring data highlight major challenges ranging from poor adherence to the national HCT guidelines to inadequate skill levels of CT staff, from low linkage-to-care rates to possibly coercing clients into testing in order to meet the set testing targets.<sup>73</sup> Current implementation models, however, are costly, mainly because of the counselling component to them. It is not sustainable to suggest that every three months, the over 20 million HIV negative and sexually-active individuals in South Africa, could be tested and counseled in public health facilities. In 2008/09, 44% of KwaZulu-Natal's prevention expenditure, for example, was for VCT services, according to the NASA results.
- *South Africans have shown that there is an appetite for knowing one's HIV status:* 6.93 million South Africans got tested for HIV in the first 11 months of the national HCT campaign (NDOH update 25 February 2011). This is nearly three times the number tested at all health facilities in the same period in 2009, and an outstanding achievement.
- *Despite its success, the current national HCT campaign did not reach all who needed the service – self-test kits would be a low-cost, easy-to-distribute solution to reach everyone who needed it:* Even if the national HCT campaign achieved its target in 2011, many people will remain untested, or will have a need to re-test. In Soweto, Venkatesh et al. (2011) found low uptake of HCT among men and youth. HIV testing may also not reach persons in higher wealth quantiles of specific ethnic groups, and self-test kits could provide an avenue to reaching them.
- *Self-test kits provide a way to reach more persons with the service more often:* The self-testing modality will appeal to those people who would like to know their status but do not want to access a HIV testing service or have concerns about confidentiality, and those who repeat-test and have already undergone pre-test and post-test counselling at least once.
- *It is empowering to South Africans:* Empowering clients to take care of their own HIV testing needs (as with pregnancy testing) is the logical, cost-saving and strategic way to move South Africa's commendable HCT efforts into the next phase – from dedicated national campaign, to integration into routine health services (current stage), to self-testing for HIV by its citizens –

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<sup>73</sup> <http://www.plusnews.org/Report.aspx?ReportId=90410>



with sustained and strong public sector focus on provider-initiated counselling & testing (PICT), PMTCT and ensuring the continuum of care of those diagnosed HIV-positive.

- *Self-test kits for HIV are already available – regulating and promoting them would ensure appropriate use and accompanying public health messages:* Oraquick self-test kits for HIV status testing is already commercially – at some pharmacies (anecdotal, visual evidence from visiting pharmacies in the Ekurhuleni municipal area and at O R Tambo International airport) and it is sold commercially in South Africa via the internet<sup>74</sup>.
- *Even at low access and coverage rates, increased HIV testing will offer significant clinical benefit:* According to a modelling study based on South African data, annual voluntary HIV screening offers substantial clinical benefit and is very cost-effective (even in settings with the lowest incidence/ prevalence), with test acceptance and linkage rates both as low as 20%, or when accounting for stigma impact (Walensky et al., 2011). The fact that the results are upheld even with highly constrained access to care and treatment is relevant in South Africa's context.

### **How can South Africa implement this recommendation?**

- *Plan the implementation and national roll-out by:*
  - a) Putting in place regulatory mechanisms, regulations for quality, and obtain necessary approvals for the introduction of the self-test kit that has already been field-tested by the NGO iTeach in KwaZulu-Natal.
  - b) Soliciting the expertise of the private sector and social marketing experts to develop a marketing, branding, and distribution plan for self-test kit distribution: Such a plan should consider both demand-side issues (e.g. willingness and ability to pay, linkage to counselling provision, client profile, branding of kit) and supply-side issues (distribution and sales channels, margins at wholesale and retail level, pricing structure, point-of-sale material, possible link-ups with other commodities like condoms, etc.).
  - c) Developing a costed national roll-out plan for provision of the self-test kit, pricing and subsidy structure for each channel, branding and packaging, marketing, distribution, provision of counselling and confirmatory testing
  - d) Forging strategic partnerships and distribution arrangements with private sector and not-for-profit health care providers for country-wide marketing and distribution of HIV self-test kits approved for over-the-counter selling and private/domestic use.
  - e) Contracting service providers with substantial social marketing experience to coordinate and facilitate implementation of the national roll-out plan, and track distribution numbers per channel and province.
  - f) Harnessing the distribution capacity of pharmacies and health stores in South Africa, a sector which has expertise in selling related commodities like subsidized male and female condoms. Ensure that promotion and distribution of the kit uses all available commercial sales channels of wholesalers and retailers (this includes subsidized distribution in certain channels as well as not-for-profit and for-profit selling in other channels).
- *Train pharmacists with information and leaflets to hand out with every self-test kit.*
- *Ensure that appropriate and comprehensive public health messaging* the proper use of the HIV self-test is provided with it, including, for example: (i) recommendation to go to a health facility for first time testing, and to use the self-test kits for repeater testing; (ii) information about referral services for those who test HIV-positive, (iii) a help-line number on the kit for people

<sup>74</sup> For instance, HIV screening test for home use sold for R75 (2 tests) – <http://www.anytestkits.com/sa-orders.htm> (accessed 11 May 2011)

who wish to access counselling in conjunction with the self-test; (iv) information about the correct disposal of the self-test kit.

- *Monitor and evaluate implementation:* Carefully monitor the national roll-out, customer reaction and use, trends in purchases, and problems with disposal, and evaluate the potential prevention benefits of new sexual partners testing together using the self test kits.

#### **5.4 Develop, establish and implement comprehensive services for sex workers in all urban areas with high sex worker volumes.**

##### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *Sex workers contribute to South Africa's new infections, particularly in urban areas, in areas where oscillatory migration remains the norm, and along transport routes:* SWs contribute to new infections, particularly in urban hot spots and along major transport routes and border posts: such specific suburban areas in all the major metropolises in Johannesburg-Pretoria, Port Elizabeth-East London, Cape Town, Durban, Musina-Polokwane, and Bloemfontein-Kimberley. The HIV prevalence differential between sex workers and the general adult population remains large with HIV prevalence in female sex workers reported from recent studies at 46% - 66%. This differential confirms that sex workers contribute disproportionately to HIV transmission. Men who reported having had sex with a sex worker in a national survey were significantly more likely to be HIV positive (adjusted Odds Ratio =2.9). Using these data, the MoT/HIV incidence modelling study estimated that between 14% to 27% of all new infections in 2010 were sex-work related.
- *SW programmes work and are highly cost-effective to implement:* A comprehensive and standardised analysis of available HIV interventions singly and in different combinations shows that interventions focused on female sex workers are "best buys" with an average cost-effectiveness ratio of \$58 per HIV infection averted (Sub-Saharan African context, intervention package includes peer education, condom provision and treatment of STIs) (Hogan et al., 2005).
- *However, currently in South Africa, sex worker programmes in South Africa are of poor quality, not widely implemented and not comprehensive – there is room for improvement:* Sex workers lack access to adapted, high-quality services and to protection - female sex work is linked to alcohol and drug use to help solicit clients, overcome shyness, and cope with violence and stress; male sex workers with same-sex contacts encounter multiple risks including violence, unsafe practices under the influence of substances, as well as discrimination. Providing services to sex workers has been made more difficult because of the nature of their business. The illegality of sex work has impaired the provision of services to sex worker - it is assumed that as few as 5% of sex workers are reached with HIV interventions per year with no public sector programme and only a few NGOs reach out to sex workers (aids2031, 2010).
- *Comprehensive, individual services for sex workers will ensure better protection, support, and tracking of the impact of the programme, over time:* Such specialized services will be able to strengthen disease surveillance in sex workers through their routinely collected service data.

## How can South Africa implement this recommendation?

- *Plan for implementation:* Develop a comprehensive package with participation from female and male sex workers and define all the linkages and referrals which are needed. Such a service package should comprise of at least these components<sup>75</sup>:
  - a) Quality-assured sexual health services for sex workers and their clients – including HCT using national rapid test algorithm; ARV and TB treatment; STI syndromic management and therapy; Reproductive health and family planning; Risk counselling which is sensitive to sexual orientation, substance abuse, criminality and violence
  - b) Peer education by trained sex workers' peers focusing on risk reduction and promotion of positive health seeking behaviors
  - c) Consistent and reliable access to male and female condoms and lubricants
  - d) Collaboration with local police units to foster supportive policing
  - e) Add harm reduction services to the package if IDU is frequent among service users - social franchising provides the ability to easily add new services or products with a low capital investment. This applies also to oral and topical Pre-Exposure Prophylaxis (PrEP) for HIV prevention in sex workers, once authorized for use.

It would be important to ensure that the minimum service package for sex workers and their clients is free, but that all service users provide the required data for monitoring purposes.

In terms of implementing such a comprehensive package of services, the use of a **social franchise model**<sup>76,77</sup> as a basis for implementation is recommended to allow rapid scale-up, the use of economies of scale (common procurements, common staff training, etc.), and harnessing private sector capacity. The result is that clients of networked clinics would know what to expect when they enter a branded facility and benefit from services and products of a proven standard and the assurance of a defined and enforced minimum quality standard. The social franchising mechanism enables a franchisee to increase his/her credibility, adopt a proven model of service delivery, acquire specialist knowledge, obtain subsidized products, and benefit from professional advertising and promotions. The franchisor can apply tight management control and powerful brand building activities. This model has been effectively implemented in India with the Avahan project (funded by Bill and Melinda Gates Foundation), where the effective intervention focusing on sex workers helped, together with the government's efforts, to avert 3 million of the potential 5 million new infections that India would have had (keeping in mind that India has a concentrated epidemic) (Prinja et al, 2011).

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<sup>75</sup> Comprehensive adapted SW services have been tested in other settings where sex workers contribute disproportionately to transmission. The successful FSW package of fully integrated activities in Benin included sex workers registration and follow-up, STI care at a dedicated clinic, BCC carried out with field workers and peer educators, as well as empowerment and capacity building. It also covered FSW partners by using male peer educators and promotion of free and comprehensive STI care and, from 2005, ARV treatment. Note that in Benin, the sex work intervention was subsequently transferred to the national authorities, but the package was broken down into individual components leading to a drop in intervention coverage - demonstrating the importance of offering an integrated service package and its active promotion.

<sup>76</sup> Social franchising is being used successfully in many countries, providing quality services while ensuring equity in access and financial protection for low-income target groups. Examples include TB care through private GPs in Myanmar (Lonroth et al., 2007), HIV/STI prevention and care among high-risk men including MSM through private and public sector providers in Nigeria (Karllyn et al., 2009), Reproductive health services in Pakistan (McBride & Ahmed, 2001), and youth reproductive health and HIV services in several countries including Kenya (FHI, 2003).

<sup>77</sup> In South Africa, the "New Start" franchise network is providing high quality HIV counseling and testing. Each New Start site has strong referral and outreach networks for post-test care and support and strict quality control through monitoring and evaluation. South Africa's national reference laboratory, the National Institute for Communicable Diseases, provides quality assurance for testing procedures. Key elements of SFH's CT social marketing franchise are SOPs for standardised service delivery, quality assurance to monitor compliance with standards and norms, ongoing technical support for participating clinics, and strong management information systems and procedures. For more detail, see: <http://www.sfh.co.za/index.php?id=52> (accessed 14 March 2011).

- *Build capacity for implementation:* Train specialist NGOs, register them through an accreditation system, and set up the network of service providers, and develop a number of learning sites and a learning network so as to ensure that NGOs can learn from each other.
- *Contract those with knowledge to implement on a performance basis:* Contract these specialist, accredited NGOs to provide adapted and comprehensive health services to sex workers in vicinity of major sex work areas in urban centres. Ensure that part of the performance conditions with these service providers is ensuring that the service providers implement monitoring systems covering confidential registration and follow-up of all service users, their diagnostic and treatment data, and data on service quality.

## **5.5 Set up systems so as to implement expanded ARV-based prevention – once confirmatory evidence becomes available – in specific sub-populations**

### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *Some positive evidence about ART-based prevention is emerging:* ARV-based HIV prevention is widely used to avert infections to infants (PMTCT), and has recently shown some success in other sub-populations. The two main mechanisms of ARV-based prevention and evidence for its use are PrEP and ARV-based therapy to reduce the plasma viral load in HIV-positive persons and thus reduce their risk of transmission to others:
  - a) **Pre-exposure prophylaxis (PrEP) with an ARV preparation which the HIV-negative person uses to prevent HIV acquisition** – the administration route of the drug is either oral or topical (vaginal insertion by women, rectal insertion by men – topical PrEP is also called ‘microbicide’). Oral PrEP in men and transgender women who have sex with men reported 44% fewer new HIV infections in the treatment group compared to the placebo group, and 74% fewer new infections among those reporting taking 90% or more of their treatment doses (Grant et al., 2010, iPrEx study in SA and other countries). However, oral PrEP in heterosexual women has been trialled in the FEM-PrEP study and results were disappointing, resulting in stoppage of the trial due to no effect (trial included South Africa site)<sup>78</sup>. Topical PrEP (vaginal microbicide) was found effective in the CAPRISA 004 trial<sup>79</sup>, with 39% fewer HIV infections among women who used tenofovir gel before and after sex than among those who used a placebo gel with no active ingredient (Abdool Karim et al., 2010). Topical microbicides would ideally be used when condom-protected sex is not an option - rather than as a condom substitute - and if the gel does not lead to sexual disinhibition.
  - b) **ARV-based therapy which an HIV-positive person uses to prevent onward transmission to sexual partners** – this therapy is usually initiated “early” for the purpose of reducing further spread of HIV - rather than for purely medical reasons - at a specific CD4 cutoff or occurrence of certain clinical signs. In the case of pregnant HIV-positive women, early ART is given to prevent vertical transmission to the child. Latest results on ARV-based HIV prevention in heterosexual discordant couples indicate a very high efficacy if the HIV-positive person adheres to an effective ARV regimen: the risk of

<sup>78</sup> <http://www.fhi.org/en/Research/Projects/FEM-PrEP.htm> (accessed 9 May 2011)

<sup>79</sup> CAPRISA 004 was a Phase IIb (proof of concept) trial conducted by the Centre for the AIDS Programme of Research to assess the safety and effectiveness of tenofovir gel for preventing HIV infection in women when applied within 12 hours prior to sex and as soon as possible within 12 hours after sex.

transmitting HIV to their uninfected sexual partner can be reduced by 96%<sup>80</sup>. Previous studies on HIV-serodiscordant heterosexual couples indicated that ART – given as therapy – markedly reduces HIV infectiousness<sup>81</sup>, in one study by 92%<sup>82</sup>. A meta-analysis of five observational studies found an overall risk of HIV heterosexual transmission from someone on ART of 0.46 per 100 person-years<sup>83</sup>. Recent results from Rakai, Uganda showed a highly significant reduction in HIV incidence rate in ART-using discordant couples compared to those without ART use (Reynolds et al., 2011). Viral load was markedly reduced in persons on ART, and couples reported more consistent condom use during ART use in the absence of significant differences in reported risk behaviours. Because of these results, the World Health Organisation is in the process of developing guidelines for discordant couple programming that recommends ART initiation for the index case in a discordant couple as soon as the discordant couple is identified.

- *A partial expanded ARV-based prevention policy is already in place in South Africa, so this would be a further broadening of an existing policy (and should thus encounter fewer ethical approval requirements):* Currently, HIV positive pregnant women with CD4 count less than 350 or with clinical AIDS symptoms regardless of CD4 count, in order to prevent vertical HIV transmission and prevent disease progression in the mother (ART at CD4<350 is also prescribed for all patients co-infected with HIV and TB).
- *However, due to the paucity in comprehensive data for use in the general population, full scale implementation cannot yet be recommended:* However, despite some encouraging results, many questions remain on the programmatic use of ARVs for prevention. For instance, long-term drug adherence rates in different populations, and the effect of sub-optimal adherence on the drug's protective efficacy and on induction of ARV resistant HIV strains is not sufficiently understood to date. Despite ARV use, high vaginal viral load has been documented while plasma viral load was reduced. Therefore, ARV-based prevention is not ready for programmatic implementation. Instead, it is recommended that South Africa prepare for the possible introduction of this intervention type, and carry out the necessary groundwork to be in a position to rapidly introduce ARV-based prevention in specific target groups (particularly discordant couples), once proven to work.

### **How can South Africa implement this recommendation?**

- *Given the significant results from the afore-mentioned discordant couple trial, speed up efforts to find and support discordant couples – and ensure early ART for them (see recommendation 6 – the next recommendation – on how to deal with this priority and how to implement it).*
- *Ensure South Africa is on the cutting edge of, and fully involved in, the confirmatory and ongoing research that is needed to confirm the use of PrEP as an HIV prevention strategy:*

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<sup>80</sup> UNAIDS /WHO press release 12 May 2011: The trial, conducted by the HIV Prevention Trials Network, enrolled more than 1 700 sero-discordant couples from Africa, Asia, Latin America and the USA. Only people living with HIV with a CD4 cell count of between 350 and 550, thus not yet eligible for treatment for their own health according to latest WHO guidelines, were enrolled in the study. The reduction of sexual transmission of HIV was so significant that the trial was stopped 3-4 years ahead of schedule.

<sup>81</sup> Bunnell R et al.: Changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda. *AIDS* 2006, 20:85–92. And Sullivan P, et al.: Is the reduction of HIV transmission risk while prescribed antiretroviral therapy (ARVT) different for men and women? Results from discordant couples in Rwanda and Zambia. In 5th IAS. Cape Town, SA; 2009.

<sup>82</sup> Donnell D et al.: Heterosexual HIV-1 transmission after initiation of antiretroviral therapy: a prospective cohort analysis. *Lancet* 2010, 375:2092–2098.

<sup>83</sup> Attia S et al.: Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. *AIDS* 2009, 23:1397–1404.

Ensure that the well established centres for research on ARV-based prevention in South Africa have the necessary resources to support the ARVs-for-prevention research agenda with their specialisations in mucosal Immunology (UKZN, UCT), drug resistance (NICD, WITS), biomarkers (RHRU, UCT), and virology (UCT) – even if these need to be funded by the government due to their national importance. This could also include secondary analyses of some of the trial results that have been published, for example: conduct further analytical work on the iPrEx data<sup>84</sup> and – depending on these results – formulate a follow-up trial on ARV-based prevention in MSM. Any further trial needs to include stringent adverse events monitoring (e.g., renal insufficiency), the potential emergence of drug resistance (in patients with HIV and hepatitis B virus infection), and medication-use fatigue. The progressively lower drug adherence in the iPrEx trial may signal that peri-intercourse prophylaxis combining two nucleosides works better in the long-term than continuous prophylaxis.

- *Support implementation and rapid results dissemination of ongoing trials on ARV-based prevention:* VOICE study involving 5,000 sexually active heterosexual women in Kenya, Malawi, South Africa, Tanzania, Zambia is ongoing, and results will be available in 2012. This phase II b safety and effectiveness study tests daily oral or topical PrEP against a placebo. A confirmatory trial for the CAPRISA 004 results by a research consortium (MRC, RHRI, PHRU, Aurum, Medunsa, DTHC), implementation scheduled for 2011-2014.
- *In addition to participating actively in research, plan different scenarios for implementation:* This could include:
  - a) Conduct analytical work and modelling studies of cost scenarios, available distribution channels to reach target groups, potential marketing campaigns, and acceptability studies so that immediate implementation can begin, should the upcoming trial results on PrEP use in the general population be successful. The analytical preparatory work should specifically be conducted on the following population groups (in order of importance): MSM and transgender women; HIV-serodiscordant heterosexual couples; Sex workers and injecting drug users in urban areas; and women in the general population.
  - b) In addition to analytical work, conduct modelling studies on ARV-based prevention in the above four target groups, in order to estimate cost-effectiveness at different levels of coverage, and population-level impacts on HIV incidence (incremental impact on HIV incidence and interaction with other HIV prevention tools such as condoms, ART and partner reduction messages).
  - c) Develop regulations and implementation guidelines, which also cover the area of resistance monitoring. Prepare for the registration application to the Medicines Control Council.<sup>85</sup>
  - d) Plan a national communications campaign, implemented in the high burden urban areas first.

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<sup>84</sup> For instance, explore potential risk compensation by comparing sexual behaviours of the 553 participants who believed they received FTC-TDF with those of the 223 participants who thought they were receiving placebo (Sellier, 2011). This is important because persons who receive PrEP outside trials will expect these drugs to protect against HIV, and these beliefs will drive any risk-compensation behavior. It may also be possible to calculate syphilis incidence in the two groups. Furthermore, cost-effectiveness should be determined based on the absolute risk reduction observed, and the estimated monthly cost for FTC-TDF.

<sup>85</sup> Legislation requires that the Council registers every medicine before it may be sold /marketed. The registration is governed by the provisions and requirements of the Medicines and Related Substances Control Act No. 101 of 1965, and the regulations and guidelines published in terms thereof. Medicines need to meet technical requirements of quality, safety and efficacy of the product for the purposes for which it is intended. (Medicines Control Council – Registration of Medicines. April 2008). <http://www.kznhealth.gov.za/research/mccinfo.pdf>, accessed 12 May 2011.

**5.6 Launch a dedicated campaign for finding, testing, treating and caring for HIV-discordant couples in high density, high prevalence areas – reaching 80% of all discordant couples with a comprehensive package that includes early ART for the index partner could annually avert an estimated 37 000 new infections (around 10% of new infections every year) over the next five years.**

**Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *There are a significant number of unidentified discordant couples in South Africa.* Since most of them test individually, most of them do not know each other's status. There are an estimated 405 000 married or cohabiting, HIV discordant couples in South Africa (age range 15-54 years only). Since many steady partners are not married but have 'one main partner', there could be as many as 817 000 steady, HIV discordant couples.<sup>86</sup> Only a minority will have advanced HIV infections and be on ART.
- *Intra-couple transmission is a substantial portion of the South African HIV epidemic:* HIV transmission in steady couples has been described as the "slow" component of overall HIV transmission with low per-act transmission probability, but comparatively higher coital frequency than people who are not in steady relationships, and therefore accounting for a substantial part of all HIV transmission.
- *There are interventions that work to reduce the risk of transmission from the HIV-positive to HIV-negative person in the relationship.* Once HIV discordant couples are identified, there is a range of interventions that have proven to work for these couples – from ongoing behavioural counseling, to support for family planning and safe(r) conception, to the new evidence on ART for prevention: The HPTN 052 trial testing early ART against standard ART onset carried out among sero-discordant mostly heterosexual couples in 13 sites across Africa, Asia and the Americas was stopped in May 2011 due to overwhelming evidence that early ART significantly reduces HIV transmission within couples.<sup>87</sup> In the early ART group, there was one HIV transmission documented, whereas in the standard ART group, there were 27 (96% reduction of transmission).<sup>88</sup> The study will continue the monitoring of the couples and provide more evidence on the long-term benefits of early ART. Early ART is not only preventing infection of the spouse, it is also beneficial to the HIV-infected person (the HPTN 052 trial will provide more data on this aspect), and is likely to have broader benefits of maintaining family structure and stability.
- *Behaviour change programmes alone as an intervention strategy for discordant couples has not proven to work well.* Condom use in couples remains low and suggesting condom use in marriage is sensitive and charged with notions of mistrust and having other sexual partners. Among 25-55 year old South Africans, only 12% of married individuals and 26% of cohabiting

<sup>86</sup> Estimations based on: a) Partner data from the 2009 National Communication Survey – among 16-55 year olds who report having had sex last year, 29.0% are married, 10.1% are cohabiting, and 40.0% have one main partner. Therefore, 27.9% of 16-55 year old South Africans are either married or cohabiting, and 56.3% of 16-55 year old South Africans are either married, cohabiting or have a main partner. b) Mid-2010 population estimates from SSA: Approx. 29,038,300 South Africans are aged 15-54 years. Therefore, approx. 8,101,686 are married or cohabit (=4,050,843 couples of this type), or approx. 16,348,563 are married, cohabit or have main partner (=8,174,281 couples of this type). c) Data published by Lingappa et al. (2008) on sero-status of 286 couples in Soweto, 525 couples in Orange Farm and 315 couples in Gugulethu with overall percentage of sero-discordance of 27.4%. Therefore, about 1,109,931 sero-discordant married/cohabiting couples, or 2,239,753 sero-discordant married/cohabiting or main-partner couples.

<sup>87</sup> <http://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2011/may/20110512pstrialresults/>, accessed 13 May 2011.

<sup>88</sup> Agence France Presse on 12 May 2011 – "Early drug therapy curbs HIV transmission: study" by Kerry Sheridan.

individuals report condom use at last sex. After decades of condom promotion, it is unlikely that consistent condom use will increase in steady couples to the level required to make a population level impact. Oral ARV-based prevention by women, prior to sexual intercourse, has so far not provided positive results (the FEM-PrEP trial was stopped due to no effect).

- *A well-implemented programme of sufficient coverage will help avert another 10% of new infections every year:* Assuming an average estimated figure of 611 000<sup>89</sup> steady, HIV discordant couples in South Africa, an estimated 51,000 new HIV infections occur per year in these couples *in the absence of ART*<sup>90</sup> -- evidence suggests that 63% of these infections might be intra-couple transmission where the HPTN 052 study has shown that ART could reduce the risk of transmission by 96%. ART for 80% of the 611 000 discordant couples and assuming 90% drug efficacy<sup>91</sup> is estimated to prevent about 37 000 new HIV infections per year in HIV discordant couples. A small part of these new infections is already being prevented with current ART provision to discordant couples whose HIV infection is advanced. But more could be done. If 80% of discordant couples did receive ART compared to 0% of couples, it would reduce the annual HIV transmission rate in HIV discordant couples by about 72%.<sup>92</sup> Overall, it would prevent about 37 000 of all annual new HIV infections in South African adults (or around 10% of new infections).<sup>93</sup> Implementing MMC and a programme for discordant couples to the required levels of coverage could avert up to a third of all new infections in South Africa over the next five years.

### **How can South Africa implement this recommendation?**

*Implement, as a first phase, such a programme in highly-populated, high HIV prevalence areas for epidemiological, logistical and cost-effectiveness reasons.* The intervention should involve the following components:

- Developing detailed implementation guidelines for door-to-door HIV testing in major informal urban areas in South Africa by accredited NGO service providers. This should include mechanisms for leaving self test kits at those homes where one person in the couple is not home for immediate HIV testing. Other elements of the guidelines are: Repeat and confirmatory HIV testing, referral services for those couples who are HIV discordant, risk counselling, training and accreditation of service providers.
- Planning and costing a national campaign with urban focus, based on implementation guidelines
- Ensuring that referral networks have been established and strengthened to ensure good quality service delivery including access to ART
- Implementing door to door HIV testing in major informal urban areas (by the accredited NGO service providers), based on approved implementation guidelines
- Monitoring and evaluating access and uptake of the campaign
- Follow-up referral networks to ensure continuation of service delivery.

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<sup>89</sup> This equals an average value of 12.23 million individuals who are married, cohabiting or have one main partner and is very close to the 12.59 million individuals allocated to the group of one partner per year in the UNAIDS Modes of Transmission model for 2009 (SACEMA)

<sup>90</sup> Prevalent index partners transmitted infection at an average annual rate of 8.4% in the absence of ART (Wawer et al., 2005 – on rates of HIV transmission in HIV-discordant couples in Rakai, Uganda)

<sup>91</sup> HPTN 052 trial reported 96% efficacy, but the trial had not assessed long-term efficacy of the regimen.

<sup>92</sup> From 8.4% (an annual rate assessed in discordant couples in a Ugandan research trial) to about 2.35% (assuming 80% coverage and 90% efficacy).

<sup>93</sup> This comparison uses 2009 Spectrum estimates which predict among adults aged 15+ years a total of 344,396 new HIV infections at current ART coverage levels (UNAIDS, 2010).



## **5.7 Conduct specific feasibility, acceptability and costing studies on using incentives to address structural drivers of the epidemic by (a) changing the way in which child grants in the child grant system are awarded, and (b) investigating options to increase the rate of marriage in South Africa.**

### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *Socio-economic factors play a role in a person's risk of HIV acquisition:* Epidemiological evidence suggests that income inequality and deprivation are important co-factors to the epidemic - for instance, women who often lacked money had the greatest chance of being HIV-positive (HSRC 2005 survey data).
- *Also, severe income inequality persists, despite government economic and policy measures:* South Africa addresses income inequality through redistribution policies such as progressive taxes and pro-poor cash transfers to children, the elderly and disabled. However, none is designed for prime-age adults, who can only benefit from social assistance grants if they are disabled or are co-resident with a child or elderly person. For now, inequality in wealth and income remains severe in South Africa with a Gini coefficient estimated at 57.8 (HDR, 2009), which is more severe than inequality in Lesotho, Mozambique, Swaziland, Zambia and Zimbabwe.
- *Despite earlier neutral evidence<sup>94</sup>, there is new evidence that suggests direct economic measures to reduce vulnerability could have a positive HIV outcome and, most importantly, that the AVENUE through which the grant reaches the grantee makes a significant difference:* Recent evidence suggests that conditional cash transfer programmes can affect the sexual behavior of their beneficiaries. The "Zomba Cash Transfer Programme" reported significant declines in early marriage, teenage pregnancy, and self-reported sexual activity among programme beneficiaries (Baird et al., 2009 and 2010<sup>95</sup>). The incidence of the onset of sexual activity was 38% lower among beneficiaries. This successful proof of concept study has triggered further studies on the potential of cash transfers. Importantly, behavioural risk reduction was greater in cases where the girl -- and not the parent/guardian -- received the cash transfer directly.
- *There are currently avenues through which the Government addresses and aims to lessen economic vulnerability:* Child grants are now provided up to the 18<sup>th</sup> birthday and they go to the household the child lives in (and not to the individual child). The extension of the age range coincided with renewed efforts by government to attach behavioural conditions to the grant: As of 1 January 2010, caregivers of child support grant beneficiaries need to ensure that children for whom they are in receipt of a grant are enrolled and attending school. While enrolment can be monitored with current reporting tools, monitoring of attendance is not currently possible and would be costly to institute. School enrolment is already very high in South Africa (close to 100% up to age 15, according to the 2009 General Household Survey). In reality, the new conditionality is "soft" and punitive measures such as stopping the grant based on schooling data are not envisaged. South Africa has recognised the potential benefit of this approach and a similar study to the Zomba one is ongoing here. Enrolment has started into a randomised

<sup>94</sup> The Limpopo-based IMAGE trial in South Africa did not show that a microfinance project reduced rates of new HIV infections, although it did reduce domestic violence and women's economic standing (Kim et al 2006).

<sup>95</sup> Baird S et al. (2009), 'The short-term impacts of a schooling conditional cash transfer program on the sexual behaviour of young women'. Policy Research Working Paper 5089, Impact Evaluation Series no. 40, World Bank, Washington, D.C., October 2009. Baird S et al. (2010), 'Cash or condition? Evidence from a randomized cash transfer program', Policy Research Working Paper 5259, Impact Evaluation Series no. 45, World Bank, Washington, D.C., March 2010.

controlled trial<sup>96</sup> to determine whether providing cash transfers to young women and their household, conditional on school attendance, reduces young women's risk of acquiring HIV.

Study participants are young women aged 13-20 years, living in rural South Africa who are enrolled in high school during recruitment. HIV incidence is the main outcome measure; other endpoints are incidence of HSV-2, self-reported sexual behaviours (unprotected sex, number and age of sex partners, sexual debut), self-reported pregnancy, and school attendance. The study will last for approximately 4 years.

Therefore, one option is to reduce the vulnerability of young women by awarding the social grants to them directly, instead of to the caregivers that provide guardianship to them. Such a scheme could work to support not only the national HIV prevention goal by reducing the number of new infections amongst this sub-population. The review of the available evidence suggested that such schemes should primarily be targeted towards adolescents and young adults, as this is the population segment with highest HIV incidence, cash transfers may reduce economic dependency of females, their need for sexual partners and their acceptance of transactional sex.

- Another way in which addressing a structural driver could be addressed, is through finding ways of addressing the low rates of marriage, late (and getting later) age of marriage and the long time between age of sexual debut and age of marriage. Marriage is another socio-cultural factor that influences the risk of HIV acquisition. *Yet, despite evidence suggesting that marriage is highly protective against HIV in women, the age of first marriage has been increasing in South Africa and only 49% of South Africans ever get married (DHS 2003):* This is especially true for women, who had a median age at first marriage of 27 years in 2003. The lobola (or bride price) payment for marriage is a major barrier for marriage.
- Therefore, given that there were over 5.9 million individual tax payers in 2009/2010, *income tax breaks for long-term cohabitating or married couples could be a way in which marriage or cohabitation could be stimulated*, thereby not only offering an HIV prevention benefit, but also supporting the Government to strengthen this weakening social structure and society – the family unit. The review of the available evidence suggested that such schemes should primarily be targeted towards working, unmarried adults (as these consist of a large population of sexually active people who are in shorter or longer-term relationships without marital commitment and changing partners).

### **How can South Africa implement this recommendation?**

- *Follow emerging evidence about the use of conditional cash transfers for HIV prevention carefully.* South Africa needs to closely monitor the range of short-term and longer-term effects of the cash transfer studies implemented locally and regionally, their feasibility and cost, and their potential applicability in certain settings in South Africa. There may well be scope for implementation of evidence-informed cash transfer in places where transmission intensity is exceptionally high and where there has been no breakthrough in HIV reduction with conventional prevention programmes.
- *Therefore, it is recommended that South African Government commissions studies to assess short-, medium- and long-term economic implications, acceptability and thus determine the feasibility of (a) changing the mechanism through which grants are paid and (b) providing tax breaks to encourage long-term cohabitation and marriage:* Although South Africa already has an extensive system of social grants, it is recommended to systematically explore possible avenues

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<sup>96</sup> The HPTN 068 trial on "Effects of cash transfer for the prevention of HIV in young South African women". MRC/Wits Rural Public Health and Health Transitions Unit CRS, Bushbuckridge. See trial register on: [http://www.hptn.org/research\\_studies/hptn068.asp](http://www.hptn.org/research_studies/hptn068.asp)

of provision of incentives designed to impact adolescent and adult risk behaviour (and hence HIV incidence) by addressing structural drivers and using existing social grant system in South Africa.

Therefore, the Government should commission studies to (i) review the current evidence on cash transfers and other possible incentives schemes (tax relief, preferential access to housing, etc.) for development aims, drawing on regional and international data sources; (ii) identify options for schemes (cash transfers, tax relief for those with income<sup>97</sup>, preferential access to housing, etc.) for the benefit of the two target groups, as mechanisms to reduce their structural vulnerability and HIV risk; (iii) estimate short-term and long-term costs and potential savings, based on different scenarios and assumptions; (iv) assess fiscal and operational feasibility (channels to reach targets, eligibility of individuals, etc.); (v) explore acceptability and uptake of possible schemes; and (vi) advise on design and implementation of a proof of concept study for a pro-marriage intervention.

### **5.8 Continue with behaviour change communication in a different, less costly and more targeted format and as an ongoing public health responsibility, with the following changes in focus:**

#### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *Behaviour change communication (BCC) remains essential, but not sufficient, to reduce new infections in South Africa:* BCC is generally regarded as an indispensable component of a combination package of HIV interventions as it provides information about the entire gamut of HIV services available, and encourages the general population to utilise them. In an era of increasing ART and falling AIDS-related mortality, there is a risk that people lose the respect or fear of AIDS (the risk reduction in Zimbabwe, Uganda and urban Malawi has at least partly been attributed to widespread and visible AIDS illness and death, Bello et al., 2011). Data-informed BCC – in the form of dedicated campaigns or as part of another intervention like MMC - need to continue – it is a public health imperative and there is evidence that BCC contributes to risk reduction, although links to their impact on HIV incidence has not been causally proven.
- *BCC has many public health benefits and it is irresponsible not to provide it – it needs to continue:* In its broader sense, BCC is an essential part of biomedical interventions, since BCC will aim to enhance the uptake, efficacy and effectiveness of these interventions (e.g. MMC: sexual abstinence after surgical procedure, prevention of risk compensation in circumcised males; PMTCT: safer sex during pregnancy, exclusive breastfeeding; ART: drug adherence, condom use). In the narrow sense, BCC is focusing on risk reduction in order to curb HIV transmission.
- *BCC's success is difficult to measure, but it is plausible that it has contributed to higher levels of self-reported condom use, especially amongst the youth:* It has been a challenge to gauge the effects of BCC since self-reports on sexual behaviours have been found unreliable, and it is impossible to know people's true sexual behaviours. Local and regional data demonstrate that reports of condom use, partner numbers and sexual activity are often not accurate. However, there is evidence that the recent HIV decline in young people in South Africa and other countries it linked to risk reduction by young people (Gouws et al., 2010). It cannot be causally proven, but it is likely that campaigns have contributed to these changes. In South Africa, the

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<sup>97</sup> In 2009/10, there were 5.9 million individual taxpayers in South Africa (2010 Tax statistics by National Treasury and South African Revenue Service).

estimated HIV incidence rate in 16-18 year olds has halved between 2002 and 2008, but incidence in 19-20 year olds is still similar to 2002 levels.

### **How can South Africa implement this recommendation?**

- *Change the way messages are communicated:* Change the focus from exclusively focusing on national mass media campaigns to viral, social media-based, community-driven campaigns, and accredit all implementers of such services to ensure that good quality messaging is provided. Within such a community-drive approach, it would be essential to use the services of large community-based structures in South Africa such as faith-based communities and structures. The Zionist church, for example, gather all their members over Easter (over 7 million persons to one venue) and such opportunities should be used. These communities are typically well-motivated and organised, and such viral messages flow well through them.
- *Expand the nature of BCC content:* Currently, there is an almost exclusive focus on BCC as a standalone intervention to induce or facilitate behaviour change for the purpose of HIV prevention. However, BCC encompasses all communication efforts to the general population (or specific sub-populations within it) to support them to take up the entire range of HIV services – from prevention, to care and support and impact mitigation. BCC campaigns should therefore expand their focus to deal with these issues:
  - Risk of concurrent and multiple sexual partners, and options for mitigating the risks (fewer sexual partners, or consistent condom use with all partners) – for HIV negative and positive persons
  - Male circumcision promotion
  - Condom use promotion in non regular partnerships
  - Couple counselling and testing, and ARVs to reduce the risk to HIV-negative person in partnership
  - Impact of viral clade on HIV epidemic spread
  - Benefits of and responsibilities associated with self-test kits for HIV
  - Importance of neo natal circumcision
  - Processes and procedures for becoming accredited for HIV service delivery, and the government's new HIV service delivery standards
  - PMTCT promotion – focusing on all four prongs of PMTCT, including the avoidance of unplanned pregnancies
  - Support for sex workers
  - Availability of referral services and support structures
- *Integrate BCC with all health services* -- i.e. whenever someone approaches health related services (at the hospital, with private physicians, at any clinic, support groups in the community, and during any health service where a person is seeking better health for themselves).
- *Target populations and specific geographic areas:* Focus intensively on urban informal areas with door to door campaigns, home testing to identify discordant couples (see recommendation 7), and effective referral programmes.

BCC message	Target population and geographic area
Risk of concurrent and multiple sexual partners, and options for mitigating the risks (fewer sexual partners, or consistent condom use with all partners) – for HIV negative and positive persons	Persons who engage in these behaviours Adults aged 25 and older in urban, informal areas Youth in all urban and rural areas
Male circumcision promotion: benefits and increased sexual pleasure	HIV negative men who are sexually active, and their sexual partners, particularly in Gauteng, Eastern Cape and Kwazulu-Natal
Condom use promotion in non regular partnerships	Youth in provinces with highest burden of disease
Couple counselling and testing, and ARVs to reduce the risk to HIV-negative person in partnership	Urban formal and informal areas
Impact of viral clade on HIV epidemic spread	General national campaign
Benefits of and responsibilities associated with self-test kits for HIV	General, national campaign with specific focus on medical professionals, including pharmacists
Importance of neo natal circumcision	All pregnant women, their mothers and their sexual partners
Processes and procedures for becoming accredited for HIV service delivery, and the government's new HIV service delivery standards	All HIV service delivery organisations
PMTCT promotion – focusing on all four prongs of PMTCT, including the avoidance of unplanned pregnancies	All pregnant women, and all women who have been pregnant High school girls
Support for sex workers	Health workers
Availability of referral services and support structures	General national campaign

- *Change the substance of the messages to focus on these sub populations with these messages:* Focus on partner reduction, with a major focus on concurrency, as HIV prevalence reduction occurred in every country that has brought about partner reduction efforts. Also, continue to educate parents and young women on the additional dangers of having sex with an older person, and to aggressively market condoms amongst the youth for all types of sexual partnerships. Further, promote consistent condom use in older adults with secondary or non-regular partners as the only responsible option for heads of families and parents. Have a specific campaign for older adults, given that up to 50% of new infections occur in people 25 and older.

## **5.9 Routinise full PMTCT package at all public and private ANC facilities and by private service providers to the government standard and for the lowest cost.**

### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *PMTCT works to avert an infant becoming infected pre- and postnatally.* The PMTCT programme has led to dramatic HIV incidence and HIV prevalence reductions amongst infants in recent years. Survey data confirm that the HIV prevalence level in children aged 2-14 years has halved between 2002 and 2008. Nevertheless, tens of thousands of babies still get infected each year (in 2009, an estimated 43,000 new infections occurred in children aged 0-14 years).
- *PMTCT is being implemented in South Africa and there is strong support for it.* South Africa has created a strong policy framework for PMTCT, further strengthened in 2010 with the new

clinical guidelines mandating early ART for infected mothers and chemoprophylaxis throughout breastfeeding.

- *However, service quality and universal access for all women remains a challenge.* While the policy is clear on what every HIV-positive mothers and her baby should be provided with by the public health system, implementation lags behind. The large variations in service quality between individual health districts have been described, and the A-Plan was conceived to help the 18 districts with greatest need to fast track expansion and service improvement. The expansion phase used a large part of the prevention budget (for instance in KZN, 41% in 2007/08). While almost all public health facilities now provide PMTCT services, there are concerns about actual service quality, universal access to dual therapy, follow-up of mothers and infants, record keeping and programme monitoring quality.

### **How can South Africa implement this recommendation?**

- *Develop and disseminate PMTCT integration and service quality standards.* Disseminate service quality standards to public and private providers of PMTCT.
- *Integrate PMTCT services into maternal and child health programmes, focusing on all four prongs.* Change the management focus at province, district and facility level from PMTCT expansion and service establishment to a focus on programme efficiency, service quality and linkage to other services ('integration'). Implement the four prongs of the programme with key focus on counselling of positive women/couples on safer sex, family planning, postnatal contraception and partner testing, as per guideline
- *Monitor and evaluate program implementation comprehensively.* Use programme reviews and monitoring data to proactively improve programme performance and address bottlenecks, problems in efficiency, access and follow-up (as done for instance in KZN by Mate et al., 2009)

### **5.10 Manage the implementation of all HIV prevention services to a high standard.**

#### **Why should South Africa implement this recommendation as a core HIV prevention strategy?**

- *Quality improvement methods can make significant contributions to better health outcomes in resource poor settings* (Leatherman et al., 2010): In the India Avahan programme, it was shown that defining, implementing and monitoring rigorous standards for implementation ensured high coverage, 'trackable' progress, good quality, satisfied beneficiaries, and good HIV prevention outcomes (India has just published data to show that they have averted almost 3 million out of a potential 5.5 million new infections because of the rigorous focus on quality and tracking of implementation and because of a focus on the right populations) (Zall Kusek, 2009; Prinja et al, 2011).
- *The current quality of implementation in South Africa is not ideal.* Although great strides has been made in improving access to programmes (South Africa UNGASS report, 2010), concomitant progress has not been made in monitoring, maintaining or improving the quality of implementation. In the ART programme, for example, multiple quality-related challenges exist: the primary health care facilities lack a standardized methodology for the management of patient data (a three tiered ART monitoring strategy with SOPs is currently being developed). It is not known to date how many of the initiated patients are still on ART. Cornell et al. (2011) report that the risk of appearing 'loss-to-follow-up' (LTFU) at 12 months on ART was 12 times

higher among patients enrolled in 2007 than those enrolled in 2002/2003. The lack of ART monitoring data also negatively affected the national HCT campaign and its evaluation.

### **How can South Africa implement this recommendation?**

- *Define target populations for each HIV service, estimate number of persons in these target populations needing the service, set clear service coverage targets, and monitor them quarterly at the district levels.* Developing simple Standard Operating Procedures (SOPs)<sup>98</sup> all prevention interventions, where they do not exist, and monitoring adherence to these procedures, as well as setting service coverage targets for all HIV prevention services -- with clearly delineated denominators and coverage targets for every province (stratified by urban and rural targets).
- *Once HIV services have been defined and SOPs developed for them, accredit NGOs to provide these HIV-related prevention services based on the SOPs – and monitor that they adhere to the standards set in the SOPs (remove accreditation if they do not adhere to standards set).*
- *Define minimum spent on HIV prevention for all conditional cash transfers.* Defining that a minimum of 25% of all HIV funding in South Africa be dedicated to HIV prevention efforts<sup>99</sup>
- *Collect better data:* Ensuring excellent, high quality, real time data collection on coverage of HIV services so that midterm adjustments can be made - this can include cell phone coverage surveys of beneficiaries and an online system to register service provision by HIV prevention service providers
- *Implement better at the provincial level:* Promoting real-time coordination of implementation of HIV services at provincial level

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<sup>98</sup> SOPs promote uniformity and consistency in operations and in the quality and integrity of services and products. SOPs document the way activities are to be performed to facilitate consistent conformance to technical and quality system requirements and to support data quality.

<sup>99</sup> The cost and financing report by CEGAA and R4D (2010) proposes for 2011 a prevention allocation of 18% (narrow NSP scenario), 21% (expanded NSP scenario) and 17% (hard choices scenario) (Appendices G, H and I of the report)

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