New HIV prevention technologies and their relevance to MARPS in African epidemics

K. Rebe, P. Semugoma, J.A. McIntyre

Background and context
Men who have sex with men (MSM) in Africa constitute a diverse group of men with different sexual identities and behaviours, many of which do not conform to a ‘Westernised’ gay identity (Lane, Mogale, Struthers, McIntyre & Kegeles 2008; Lane, Raymond, Dladla, Rasethe, Struthers & McFarland 2009). Many MSM identify as heterosexual and do not disclose their same-sex behaviours. They remain hidden and are extremely hard to identify for research purposes or clinical interventions. The sexual health of MSM, specifically sexually transmitted infections (STIs) including HIV has been ignored in the developing world with only fractions of governmental spending allocated to this group who are at especially high risk of HIV transmission and acquisition (Rispel & Metcalf 2009). With some exception, the lives of MSM communities in Africa are characterised by prejudice, stigma, criminalisation and often violence, all of which contravene the principals of human rights. Governments and non-governmental organisations are reluctant to provide programming or interventions for MSM communities and often sanction and promote prejudice. A current example of this is the Homosexuality Bill currently being considered in Uganda that would prescribe the death penalty for practising homosexuals (Thomas 2011). Evidence-based HIV prevention and treatment programmes for MSM have mostly not been implemented by African governments, and MSM-specific HIV information and education programmes are non-existent. Condoms remain poorly available and poorly promoted for MSM and condom-compatible lubricants are often entirely unobtainable. HIV and STIs screening programmes follow a heteronormative pattern and are not tailored to MSM sexual health care needs (De Swardt & Rebe 2010). Since older effective prevention and treatment technologies have not been up scaled for African MSM, questions arise regarding the applicability and feasibility of newer prevention technologies such as pre-exposure prophylaxis (PrEP) and microbicides. The implementation of these newer technologies may be difficult and they would need to fit into a menu of combination prevention choices that are specifically relevant to African MSM (Cohen, Meissig, Smith, Powers & Kashuba 2012; Shelton 2011).

Early anti-retroviral therapy
Recent studies have demonstrated that treating HIV positive people in discordant relationships provides a large measure of HIV risk reduction to their negative heterosexual partners (Ambrosioni, Calmy & Hirschel 2011; Attia, Egger, Muller, Zwaal & Low 2009; Cohen, Chen, McCaulay, Gamble, Hosseinipour, Kumarasamy, et al. 2011). Similar evidence for MSM is lacking but some epidemiological evidence exists showing that treatment of positive MSM may be lowering HIV incidence in some settings, presumably because of a lowering of the ‘community viral load’ (Cowan, Gerstoft, Haff, Christiansen, Nielsen & Obel 2012; Das, Chu, Santos, Scheer, Vittinghof, McFarland, et al. 2010). Challenges to implementation of earlier and expanded anti-retroviral therapy (ART) in Africa include country budgetary constraints, decreased global donor funding, lack of political will, prejudice and stigma among others. Motivating governments to include earlier treatment of a stigmatised group in their country-specific HIV programming is challenging in countries where ART access for the general HIV positive population is limited (Garnett, Becker & Bertozzi 2012). At the same time, given the higher burden of HIV among MSM populations, and the higher incidence rates, targeting them specifically for early ART is logically an important evidence-based intervention (Rebe, Struthers, De Swardt & McIntyre 2011).

Post-exposure prophylaxis
International guidelines are available for the provision of post-exposure prophylaxis (PEP) following sexual assault or consensual sexual which results in possible exposure to HIV. The use of PEP has become commonplace in the developed world (Benn, Fisher & Kulasegaram 2011; Panlilio, Cardo, Grohskopf, Heneine, Ross & US Public Health Service 2005; World Health Organisation 2007). In Africa, it has been poorly promoted and remains largely inaccessible (Pietersse 2011). Implementation depends on buy-in from both politicians and health providers. PEP is often required after hours when ART clinics are closed so there is a requirement for training of general doctors working in emergency services across Africa to provide it appropriately and safely.

Pre-exposure prophylaxis
The iPrEx study provided proof of concept that daily emtricitabine and tenofovir (Truvada®) can reduce the risk of HIV negative MSM acquiring the virus by 44% (Grant, Lama, Anderson, McMahan, Liu, Goicochea, et al. 2010). It must be noted that...
only 88 African MSM were recruited (out of 2499) into the iPrEX study and as this was a randomised placebo controlled trial, approximately, half would have received the intervention and half the placebo. It is unknown if PrEP efficacy would differ among African MSM compared to those in North or South America. Clearly, there may be genetic, personal and societal factors which influence the effectiveness of PrEP in Africa. Studies conducted in the third world have shown that PrEP knowledge is extremely low but many MSM would be prepared to use the intervention if it was available (Eisingerich, Wheeldon, Gomez, Garnett, Dybul & Piot 2012). PrEP guidance is in development by the HIV Clinicians Society of South Africa to provide guidance to clinicians wishing to provide this to their MSM clients; this will be the first African PrEP guidelines document (Consensus Committee, Southern African HIV Clinicians Society 2012). Major challenges to PrEP implementation in Africa include those mentioned for ART and PEP, as well as a lack of community knowledge and demand. It becomes difficult to motivate for anti-retrovirals for HIV negative MSM when these drugs may not be freely available to HIV positive individuals; African governments will clearly prioritise treatment of heterosexuals over PrEP for MSM.

**Microbicides**

The CAPRISA 004 study provided proof of concept that ARV-containing topical preparations can decrease HIV transmission among HIV negative heterosexual women, although prevention was only partial (Karim, Karim, Frohlich, Grobler, Baxter, Mansoor, et al. 2010). Microbicides will need to be specifically formulated to allow for anal in addition to vaginal use as the anal canal is anatomically and physiologically dissimilar to the vagina, which may affect the performance of any microbicide products (McGowan 2011). Research is currently on-going and there is as yet no ideal product for use by MSM. Studies have demonstrated that topical microbicides are acceptable to MSM and that adverse effects are manageable (Eisingerich et al. 2012). Implementation of microbicides for HIV prevention for MSM will depend on many of the structural factors already discussed, as well as on the cost, packaging and promotion of the product. It is of concern that many African countries have not even been able to scale up condom and lubricant distribution to MSM which provides a much higher level of prevention than microbicides (Weller & Davis-Beaty 2009).

**Combination prevention**

It is recognised that African MSM constitute an extremely heterogeneous group of men with different levels of risk of HIV, different lifestyles, levels of health care access and priorities. Therefore, no single prevention intervention is likely to suit all MSM in Africa. This leads to a concept of a menu of prevention choices from which MSM can choose and combine prevention modalities that are relevant to their own lives and levels of potential HIV exposure (Hallet, Baeten, Heffron, Barnabas, de Bruyn, Cremin, et al. 2011; Rebe et al. 2011). Combination prevention includes structural, biomedical and psychosocial/behaviour change interventions. It is hoped that adopting a variety of different prevention modalities might prove synergistic. Some interventions are already available and effective and should be scaled up. These include biomedical interventions such as condoms and condom-compatible lubricants, increased HIV screening and counselling, treatment of STIs, early appropriate ART for positives, promotion and provision of PEP and possibly PrEP and microbicides as evidence for their use increases.

Behavioural change interventions always need to accompany biomedical interventions and counselling needs to be MSM specific. An example is the Advice, Consent, Test, Support model of counselling used by counsellors in state-sector HIV and anti-retroviral programmes in South Africa which adopts a heteronormative stance when discussing HIV with clients. Often discussions about anal sex, which has an HIV transmission rate 10–20 times that of vaginal sex, are avoided completely (De Swardt & Rebe 2010). Most biomedical interventions incorporate behavioural changes, such as deciding to use condoms and lubricant or deciding to screen regularly for HIV.

**Medical male circumcision**

Medical male circumcision has been shown to decrease the risk of HIV-negative men contracting HIV during vaginal sex, is an acceptable intervention for many men and is being scaled up as part the South African Department of Health’s national HIV prevention strategy (Siegfried, Muller, Deeks & Volmink 2009). Unfortunately, medical male circumcision (MMC) has not been proven to be of benefit to MSM generally although there are some sub-categories of MSM who may benefit, namely those who have sex with men and women and those who are exclusively the penetrative partner during anal sex (Millett, Flores, Marks, Reed & Herbst 2008; Templeton, Millet & Grulich 2010). Despite the lack of efficacy, it is likely that MSM will present for MMC. It would be inadvisable to exclude MSM or bisexual men from MMC programmes as this could create questions about the sexual orientation of men excluded from the programme. Risk reduction messages need to educate men that they may not be protected during anal sex with other men.

Advocacy is urgently required to promote a human rights agenda which challenges governmental and health provider stigma and prejudice based on sexual orientation. Governments need to be held accountable for providing appropriate health care for marginalised, even criminalised populations that have specific health risks. Advocacy is also needed to ensure that adequate funding is dedicated to such programmes, both state and donor funding. Community activism is also required to ensure that MSM are aware of their human rights and to create demand for existing and innovative HIV-prevention technologies. It is important to remember that MSM are part of the wider community, and HIV prevention targeting this most at-risk population benefits the wider general population of any country (Beyrer, Wirtz, Walker, Johns, Sifakis & Baral 2011).

**References**

Ambrosiono, J., Calmy, A., & Hirschel, B. (2011). HIV treatment for prevention. The Journal of the International AIDS Society, 25(S14), 28.

Atta, S., Egger, M., Muller, M., Zwahlen, M., & Low, N. (2009). Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. AIDS, 23(11), 1397–1404.

**References**

Ambrosiono, J., Calmy, A., & Hirschel, B. (2011). HIV treatment for prevention. The Journal of the International AIDS Society, 25(S14), 28.

Atta, S., Egger, M., Muller, M., Zwahlen, M., & Low, N. (2009). Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. AIDS, 23(11), 1397–1404.
Benn, P., Fisher, M., & Kulasegaram, R. (2011). UK guideline for the use of post-exposure prophylaxis for HIV following sexual exposure. International Journal of STDs and AIDS, 22(12), 696–708.

Beyrer, C., Wirtz, A.L., Walker, D., Johns, B., Sifakis, F., & Baral, S. (2011). The Global HIV Epidemics among Men Who Have Sex with Men. Washington, DC: The International Bank for Reconstruction and Development/The World Bank.

Cohen, M.S., Chen, Y.Q., McCauley, M., Gamble, T., Hosseinipour, M.C., Kumarasamy, N., & Fleming, T.R. (2011). Prevention of HIV-1 infection with early antiretroviral therapy. New England Journal of Medicine, 365(6), 493–505.

Cohen, M.S., Meissig, K.E., Smith, M.K., Powers, K., & Kashuba, A.D. M. (2012). Antiretroviral agents and HIV prevention: controversies, conflicts and consensus. AIDS, 26(13), 1585–1598, Epub 12 April 2012.

Consensus Committee, Southern African HIV Clinicians Society (2012). Southern African guidelines for the safe use of pre-exposure prophylaxis in men who have sex with men who are at risk for HIV infection. Southern African Journal of HIV Medicine, 13(2), 40 – 55.

Cowen, S.A., Gerstoft, J., Hall, J., Christiansen, A.H., Nielsen, J., & Obel, N. (2012). Stable incidence of HIV diagnoses among Danish MSM despite increased engagement in unsafe sex. Journal of Acquired Immune Deficiency Syndromes, 61(1), 106 –111, Epub 15 May 2012.

Das, M., Chu, P.L., Santos, G., Scheer, S., Vittinghoff, E., McFarland, W., & Collins, G. (2010). Decreases in community viral load are accompanied by reductions in new HIV infections in San Francisco. PLoS One, 10(5), e11068.

De Swardt, G. & Rebe, K. (2010). From top to bottom: a sex-positive approach to care for men who have sex with men – a manual for healthcare providers (2010ed.). Johannesburg, ANOVA Health Institute.

Eisingerich, A.B., Wheelock, A., Gomex, G.B., Garnett, G.P., Dybul, M.R., & Pot, P.K. (2012). Attitudes and acceptance of oral and parenteral HIV preexposure prophylaxis among potential user groups: a multinational study. PLoS One, 7(1), e28238, Epub 11 January 2012.

Garnett, G.P., Becker, S., & Bertozzi, S. (2012). Treatment as prevention: translating efficacy trial results to population effectiveness. Current Opinion in HIV and AIDS, 7(2), 157 –163.

Grant, R., Lama, J.R., Anderson, P.L., McMahan, V., Lai, A.Y., Goicochea, P., et al. (2010). Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. New England Journal of Medicine, 363(27), 2587–2599.

Hallet, T.B., Baeten, J.M., Heffron, R., Barnabas, R., de Bruyn, G., Cremin, I., et al. (2011). Optimal uses of antiretrovirals for prevention in HIV-1 serodiscordant heterosexual couples in South Africa: a modelling study. PLOS Medicine, 8(11), e1001223.

Karim, Q.A., Karim, S.S. A., Grobler, A.C., Baxter, C., Mansoor, L. E., et al. (2010). Effectiveness and safety of tenofovir gel, an antiretroviral microbicide, for the prevention of HIV infection in women. Science, 332(5996), 1168–1174.

Lane, T., Mogale, T., Struthers, H., McIntyre, J., & Kegeles, S.M. (2008). They see you as a different thing: the experiences of men who have sex with men with healthcare workers in South African township communities. Sexually Transmitted Infections, 84(6), 430 – 433.

Lane, T., Raymond, F., Dladla, S., Rasethe, J., Struthers, H., McFarland, W., & McIntyre, J. (2009). High HIV prevalence among men who have sex with men in Soweto, South Africa: results from the Soweto men’s study. AIDS Behavior, 15(3), 626 – 634.

McGowan, I. (2011). Rectal microbicides: can we make them and will people use them? AIDS Behavior, 15(Suppl 1), 566 – 571.

Millet, G.A., Flores, S.A., Marks, G., Reed, J.B., & Herbst, J.H. (2008). Circumcision status and risk of HIV and sexually transmitted infections among men who have sex with men: a meta-analysis. Journal of the American Medical Association, 301(11), 1126 – 1129.

Panlilio, A.L., Cardo, D.M., Grohskopf, L.A., Heneine, W., Ross, C.S., & US Public Health Service (2009). Updated U.S. public health service guidelines for the management of occupational exposures to HIV and recommendations for postexposure prophylaxis. The MMWR Recommendations and Reports, 58(54), 1 – 17.

Piererse, M. (2011). Impeding access? Stigma, individual responsibility and access to post-HIV-exposure prophylaxis (PEP) in South Africa. Journal of Medicine and Law, 30(2), 279 – 294.

Rebe, K.B., Struthers, H., De Swardt, G., & McIntyre, J.A. (2011). HIV prevention and treatment for South African men who have sex with men [Opinion piece]. South African Medical Journal, 101(10), 708 – 710.

Rispe, L.C. & Metcalfe, C.A. (2009). Breaking the silence: South African HIV policies and the needs of men who have sex with men. Reproductive Health Matters, 17(33), 133 – 142.

Shelton, J. (2011). ARVs as HIV prevention: a tough road to wide impact. Science, 334(6063), 1463 –1464.

Siegfried, N., Muller, M., Deeks, J.J., & Volmink, J. (2009). Male circumcision for prevention of heterosexual acquisition of HIV in men [Cochrane Review, meta-analysis]. Cochrane Database Systematic Reviews, 15(2), CD003362.

Templeton, D.J., Millett, G.A., & Grulich, A.E. (2010). Male circumcision to reduce the risk of HIV and sexually transmitted infections among men who have sex with men. Current Opinion in Infectious Diseases, 23(1), 45 – 52.

Thomas, S. (2011). Uganda’s anti-homosexuality bill fails, for now. HIV/AIDS Policy Law Review, 15(3), 37 – 38.

Wellar, S.C. & Davis-Beaty, K. (2009). Condom effectiveness in reducing heterosexual HIV transmission [Cochrane review]. The Cochrane Library, (1), 1 – 23.

World Health Organisation (2007). Post-exposure Prophylaxis to Prevent HIV Infection: Joint WHO/ILO Guidelines on Post-exposure Prophylaxis to Prevent HIV Infection. WHO Library Cataloguing, Geneva, Switzerland. Retrieved 21 May 2012.