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# **FAST-TRACKING COMBINATION PREVENTION**

TOWARDS REDUCING NEW HIV INFECTIONS TO FEWER THAN 500 000 BY 2020

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## KEY POINTS

- To reduce new HIV infections globally to fewer than 500 000 by 2020, a step towards ending the HIV epidemic as a public health threat by 2030, we need to Fast-Track the response, **including renewed commitment to, sustained funding for and scaled-up implementation of HIV prevention programmes.**
- **The HIV epidemic is mostly sustained by pockets of high rates of transmission. This is where HIV prevention efforts need to focus.** These include key populations (in particular, female, male and transgender sex workers and their clients, men who have sex with men, and people who inject drugs) and, mostly in eastern and southern Africa, young women and their older male sexual partners.
- **No single HIV prevention approach alone can stop the epidemic.** Meeting ambitious 2020 and 2030 targets requires focused combination packages that offer **a mix of proven high-impact HIV prevention interventions.** These include condom provision, immediate initiation of antiretroviral therapy (ART) and pre-exposure prophylaxis (PrEP). Specific populations and locations require additional tools such as harm reduction (needle-syringe and opioid substitution therapy programmes) for people who inject drugs and voluntary medical male circumcision (VMMC) for men in eastern and southern Africa.
- **Saturation of HIV prevention programming in specific locations and for specific key populations** is needed so that HIV prevention is delivered at adequate scale where and for whom it will make the most difference.
- More than ever, **HIV prevention and treatment need to be delivered together** in all dimensions of programming, including service delivery, demand generation and support for treatment adherence.
- **Continued innovation is essential.** This includes better technology—improved condoms, new male circumcision devices, long-acting antiretroviral medicines (ARVs)—and better programme delivery, including expanded community-based services, demand generation and adherence support, better integration with other health services and use of new media.
- **Systematic and well-managed coordination is critical to rapid progress.** Communities, policy-makers, providers and funders must work together to achieve 75% reductions in new infections among most-affected populations.

# INTRODUCTION: WHY FAST-TRACK COMBINATION HIV PREVENTION NOW?

The last decade has transformed our thinking about HIV. AIDS-related deaths have been decreasing, thanks largely to accessible and affordable treatment in the most heavily HIV-affected countries. The number of new HIV infections also has decreased in many countries (1). While the causes of this decrease in incidence are many, ART has certainly started to contribute, by decreasing viral load and, thus, transmission risk (2). This progress has stimulated discussion of the possibility of stopping new HIV infections, something unimaginable not long ago.

We may be able to reduce the number of new HIV infections to under 500 000 in 2020 and under 200 000 in 2030, thus effectively ending the AIDS epidemic as a public health threat. Compared with a 2010 baseline, these numbers would constitute a 75% reduction in new HIV infections by 2020 and a 90% reduction by 2030 (3). Achieving these goals will require focused, high-impact HIV prevention; accelerated testing, treatment and retention in care; anti-discrimination programmes; and an unwavering commitment to respect, protect and promote human rights.

The declines in HIV prevalence among young people in many countries reflect in part the success of HIV prevention programmes. Population-based surveys report increasing age at first sex and decreasing numbers of partners in Kenya, the United Republic of Tanzania, Zimbabwe and other countries (4). Several countries that have seen this decline in infections also report increased condom use among youth.

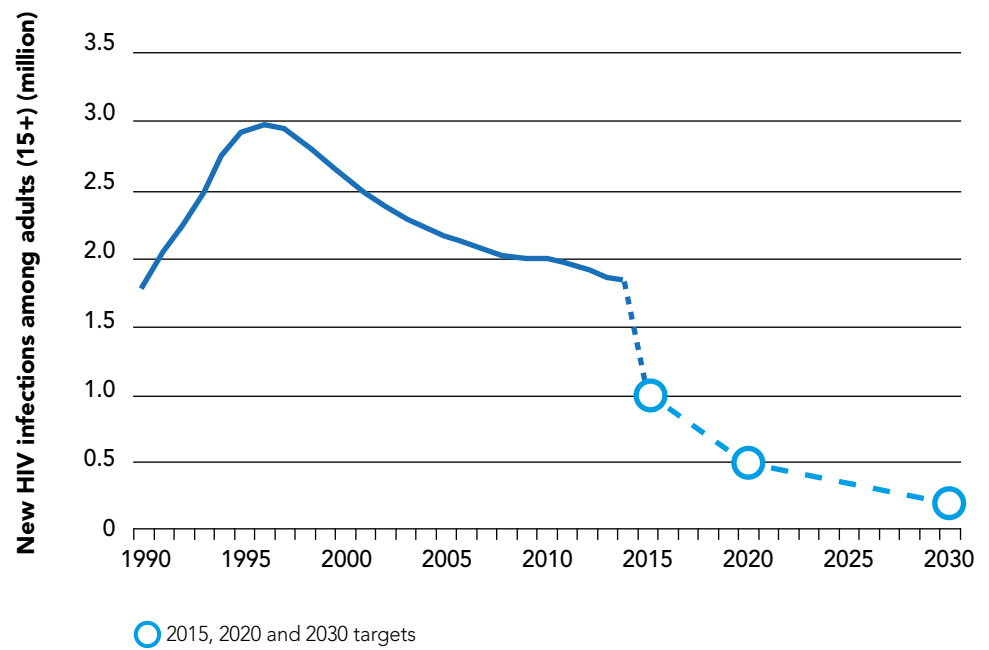
Significant declines in HIV incidence have been seen in many high burden countries, but they are not universal. Some countries in eastern and southern Africa continue to experience high incidence among young women. HIV incidence also remains high among key populations, particularly men who have sex with men, in many settings globally and among other vulnerable groups in specific countries and local contexts (5).

Overall, the current pace of progress is too slow to reach the target of 500 000 by 2020 (Figure 1). Several core HIV prevention elements will need to be strengthened, tailored to local epidemics and scaled up faster to reduce incidence to 500 000 or fewer by 2020. This paper discusses six elements of HIV prevention efforts that are crucial to achieve the target: commitment, focus, synergies, innovation, coverage and accountability.

This paper will focus on prevention of HIV infections among youth and adults, as prevention of mother-to-child transmission (PMTCT) has already been addressed in detail in separate global documents (6).

*Ending the AIDS epidemic as a public health threat by 2030 is possible.*

**Figure 1. New HIV infections among young people and adults (15+) declined by less than 10% between 2010 and 2014**



Source: Prepared for this publication based on UNAIDS global HIV estimates 2015.





# I. COMMIT TO MAKING HIV PREVENTION AND TREATMENT WORK TOGETHER

To reach the new 2020 HIV prevention goal of fewer than 500 000 new HIV infections worldwide, **renewed commitment at the international, national and local levels** to strategic and tailored combination HIV prevention programmes with adequate financing is needed.

## Renewing national commitment to HIV prevention

Commitment is at the core of successful national HIV prevention responses because HIV prevention requires both robust service delivery and changes in social norms around such issues as rights of key populations, empowerment of young women and the acceptability of services as diverse as provision of condoms, clean needles and voluntary medical male circumcision.

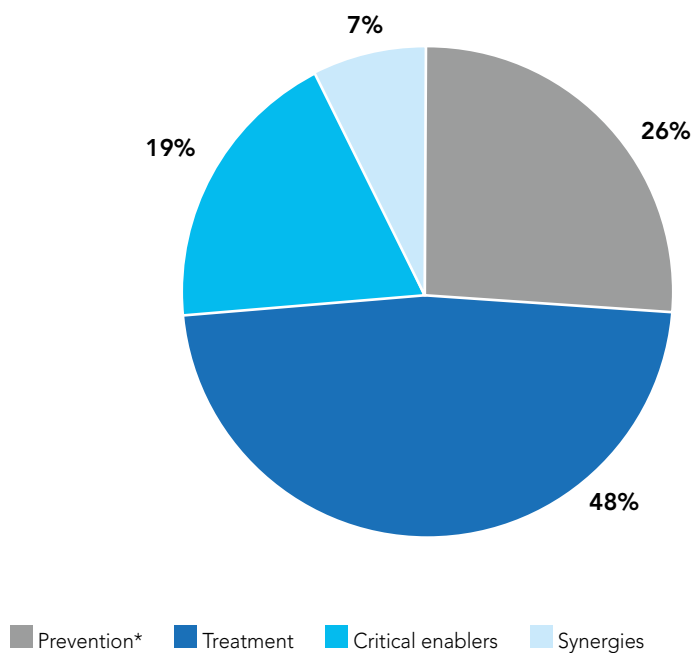
**Commitment to a national HIV prevention strategy requires specifics.** Decision-makers need clear and effective packages of investments that they can consider. Countries need to commit to specific programmatic priorities and actions. Commitment needs to gather critical mass through leaders' specific, concrete and public actions. This needs to happen at both national and local levels, with key players from the health and non-health sectors working together.

**Financial commitment to HIV prevention now saves money in the future.** Every new HIV infection averted will save future treatment and care costs. A UNAIDS modelling exercise suggests that nearly 25% of future HIV investments should go to effective combination HIV prevention interventions, with the rest supporting treatment and critical enablers, to achieve the 90–90–90 targets<sup>1</sup> and reduce new HIV infections by 75% (Figure 2) (7). Optimal allocations will vary from country to country, but, without sustaining and intensifying well-targeted HIV prevention programmes, the 2020 prevention and treatment targets will not be achieved. Treatment supports the achievement of HIV prevention targets by reducing viral load and transmission of the virus. Prevention programmes support the achievement of the 90–90–90 targets in various ways. Prevention communication enhances demand for testing, while community-based prevention programmes can increasingly integrate demand generation for early ART and adherence support for people living with HIV.

<sup>1</sup> As part of the Fast-Track approach, UNAIDS has set 90–90–90 targets for treatment: 90% of people living with HIV knowing their HIV status, 90% of people who know their HIV-positive status on antiretroviral treatment and 90% of people on treatment with suppressed viral loads.

**Figure 2. A balanced and efficient AIDS response portfolio: estimated investment required by 2020**

**Total Fast-Track requirement by 2020: US\$ 31.9 billion**



\* Includes PrEP and a small allocation to cash transfers

Source: UNAIDS modelling, 2014.

**Leaders' personal commitment as role models and advocates can transform people's norms.** HIV prevention needs the support of political and religious leaders as well as influential role models from the arts, music, business, media and sports. These leaders can raise community awareness and influence norms regarding HIV prevention, including condom use, pre-exposure prophylaxis (PrEP), voluntary medical male circumcision and early treatment. Some previous advocacy for HIV prevention involved only ad hoc, short-term special events. What is required now is ongoing technical and strategic advice for leaders to keep them informed of scientific developments and priority prevention communication needs, in particular at country and local levels.





## II. FOCUS ON THE RIGHT LOCATIONS, POPULATIONS AND PROGRAMMES TO MAXIMIZE IMPACTS

To maximize impact and use resources optimally, HIV prevention interventions of proven high impact need to be delivered to key locations and priority populations.

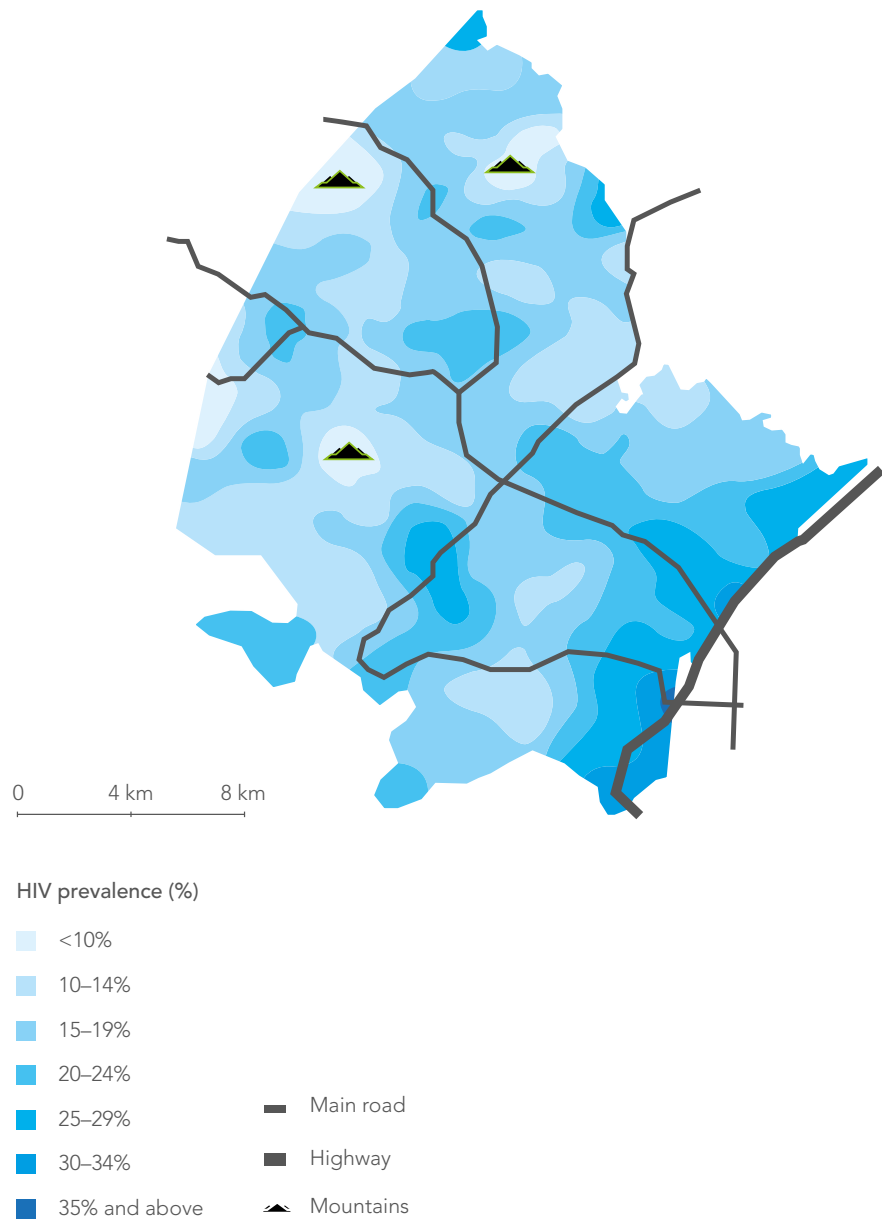
### Focus on key locations

*Prevention resources should be focused more intensely on geographic areas at elevated risk.*

Most HIV epidemics are diverse. Even in countries in southern Africa with very high HIV prevalence, risk varies by location. For example, in Mozambique mapping of HIV prevalence found the highest density of people living with HIV in districts along transport corridors and in major seaports in central and southern provinces. In KwaZulu-Natal, the province with the highest HIV prevalence in South Africa, risk is not uniformly distributed across the province (Figure 3.) or across populations or age groups (8). HIV epidemics among key populations are commonly concentrated in urban areas and other geographically-defined settings. In Burkina Faso, for example, HIV prevalence is highest in the three largest cities and significantly higher among specific key population groups. Outside these major urban areas, HIV prevalence is generally low except along two major trade routes to neighbouring countries (9).

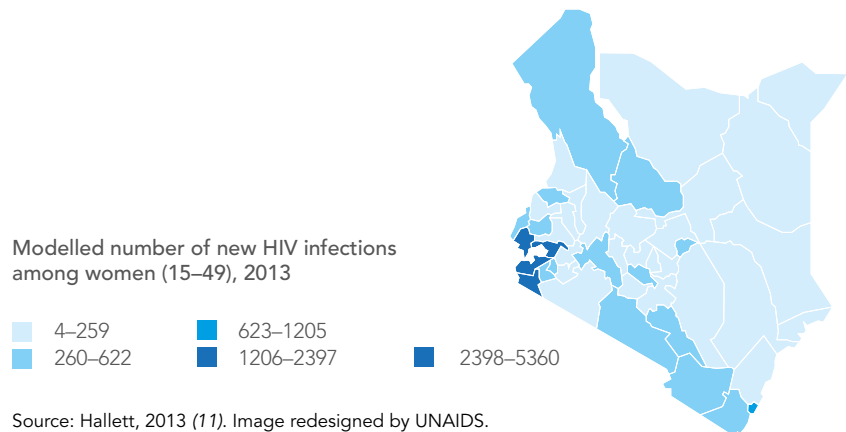
Thus, HIV prevention resources should be focused more intensely on geographic areas at elevated risk. Recent modelling found that in Kenya a uniformly distributed combination of prevention approaches could reduce new HIV infections by 40% over 15 years. But new infections could be reduced by another 14% if a prevention strategy with the same budgetary resources focused on people and locations of greatest risk (Figure 4 and Figure 5) (10). India has used geographical and population prioritization in its prevention efforts and, as a result, has seen a marked decrease in new infections between 2000 and 2010 (11).

Figure 3. Clusters of low and high HIV prevalence in a northern part of KwaZulu-Natal province, South Africa

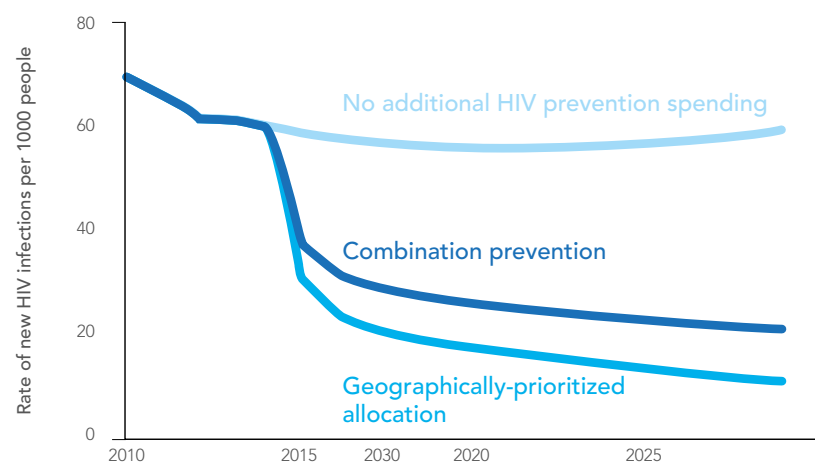


Source: Tanser et al., 2009 (2). Image redesigned by UNAIDS.

**Figure 4. Estimated new HIV infections among women in the general population, by county, Kenya, 2011**



**Figure 5. Impact of setting programme priorities based on distribution of new HIV infections, Kenya**



Note: Projected number of new infections over time nationally for a scenario with no additional HIV spending, a combination prevention scenario and a scenario of combination prevention with geographically prioritized allocation.

Source: Hallett, 2013 (12).

Focusing HIV prevention packages on people at greatest risk and key locations can increase prevention impact even without increasing expenditure. However, this would require not only intensifying programmes where they are needed most but also reducing spending where programmes are needed less. Shifting programme focus can be politically difficult, particularly where the epidemic is still seen as affecting everyone and resources

are allocated uniformly. For this reason, analyses of incidence disaggregated by location, population and mode of transmission are essential to making the case for refocusing resources in order to reduce incidence further.

By 2030 an estimated 60% of the world's population will live in cities—twice as much as in 1950. Urban areas bear a major part of the global HIV burden. In addition to their large number of people, cities tend to be home to large numbers of people belonging to key populations at high risk for HIV, such as men who have sex with men, sex workers and people who inject drugs. Thus, in low-prevalence countries where the epidemic is concentrated in key populations and in high-prevalence countries, effective prevention action including new programmes to quickly reach high coverage in cities is crucial to national outcomes. Such city programmes can be the starting point for nationwide programmes that are expanded to towns and rural areas. Even within cities there can be substantial differences in epidemics and thus a need for even tighter focus. In South Africa, for example, HIV incidence in informal urban areas is nearly 2.5 times higher than in other urban areas, which have an HIV incidence only moderately higher than rural areas (5).

### Focus on priority populations

HIV prevention programmes are most effective when they address social, gender and age groups with the highest HIV incidence rates and the largest numbers of new HIV infections while also being tailored to their sociocultural context. In all settings programmes should define priority populations based on regular epidemiologic and sociodemographic analyses of data to determine which population groups are most affected and their size, and these populations should be involved in designing, implementing and monitoring HIV prevention programmes.

In most epidemics priority populations include a combination of key populations—sex workers, men who have sex with men, transgender people, people in prisons or other closed settings, people who inject drugs—and other country specific populations. In countries and sub-national areas with high prevalence, mostly in sub-Saharan Africa, priority populations go beyond these key populations and include women and men in specific age groups and locations (see below).

Prioritizing resource allocation among priority populations should take into account differences in behavioural patterns that determine the domino effect of preventing an infection (13). For example, a new

*HIV prevention programmes will be most effective and provide the best value for money when delivered to priority populations in tailor-made programmes.*



infection in a sex worker or someone with multiple sex partners is much more likely to lead to numerous other new infections than a new infection, passed from a sex work client to their regular partner, who does not have other sexual partners. Hence, prevention will be most effective if new infections can be minimized among those priority populations, which are involved in the majority of transmission events, as averting those new infections will benefit all population groups indirectly.

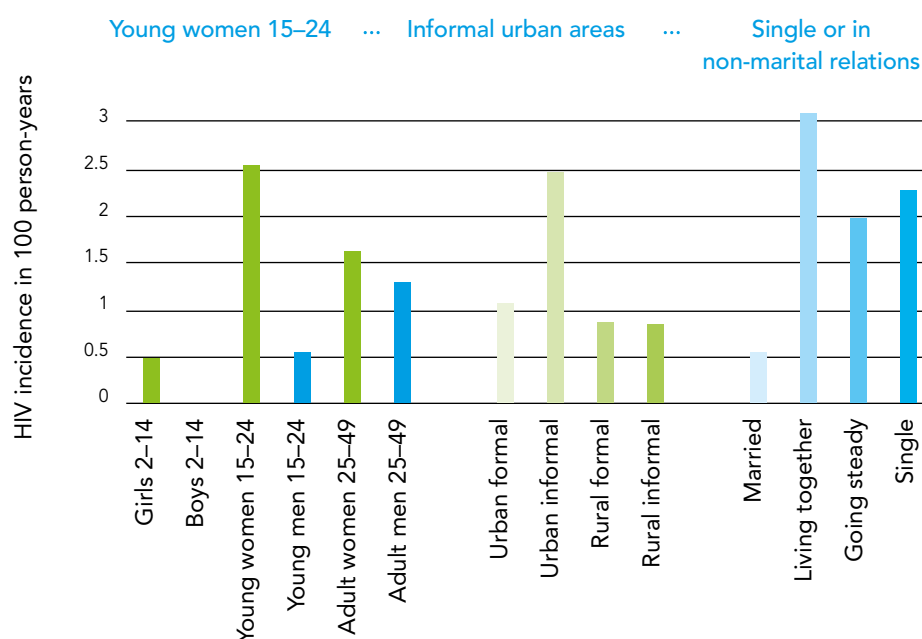
This means that the most intensive community outreach and demand generation is needed for priority population groups at the center of sexual networks in areas with high HIV prevalence, key populations and diagnosed PLHIV. It was recently estimated that in Kisumu, Kenya, although a minority of HIV infections occur directly in sex-work settings, two-thirds of new infections are attributable to sex work. This is because a large number of subsequent infections follow from each infection in a sex-work setting (14).

Over time, in some epidemics affecting key populations the relative importance of populations can change. For example, in Ukraine HIV prevalence and new HIV diagnoses among adult women in regions with high HIV prevalence continued to increase at a time when the epidemic among people who inject drugs had levelled off (15). This suggests that transmission to sexual partners of people who inject drugs has become a major source of new infections. In such instances services for key populations will remain the top priority, but access to prevention, testing and treatment should also be provided to their sexual partners.

In countries with high HIV-prevalence, particularly in eastern and southern Africa, programmes must focus strongly on young women and their male partners, but still include key populations such as sex workers and men who have sex with men. HIV incidence remains high among women ages 15–24 in some countries in eastern and southern Africa and in some of these settings also among slightly younger or older women. Due to the demographic profile in countries with high incidence, women ages 15–29 constitute a high proportion of the female population at risk for HIV. In these countries HIV incidence in men tends to be highest in the age group 20–39 and in some countries also older men (5). In addition, certain professional groups such as mobile miners, farm workers, cross-border traders or uniformed personnel face high risk and particularly need to be reached.

Finding where patterns of risk intersect is a powerful use of data to identify who needs attention most. Figure 6 presents an example. Simultaneously considering differences in risk by age/sex, residence and relationship status paints a clear picture of those most at risk in South Africa: younger women and their adult male partners, populations in informal urban areas and populations who are single or in non-marital relationships. Such information on HIV incidence rates should be triangulated with other data, such as the absolute number of new infections in these groups and risk behaviours.

**Figure 6. Using HIV incidence data to identify populations at high risk in South Africa**



Source: Shisana et al., 2014 (5).

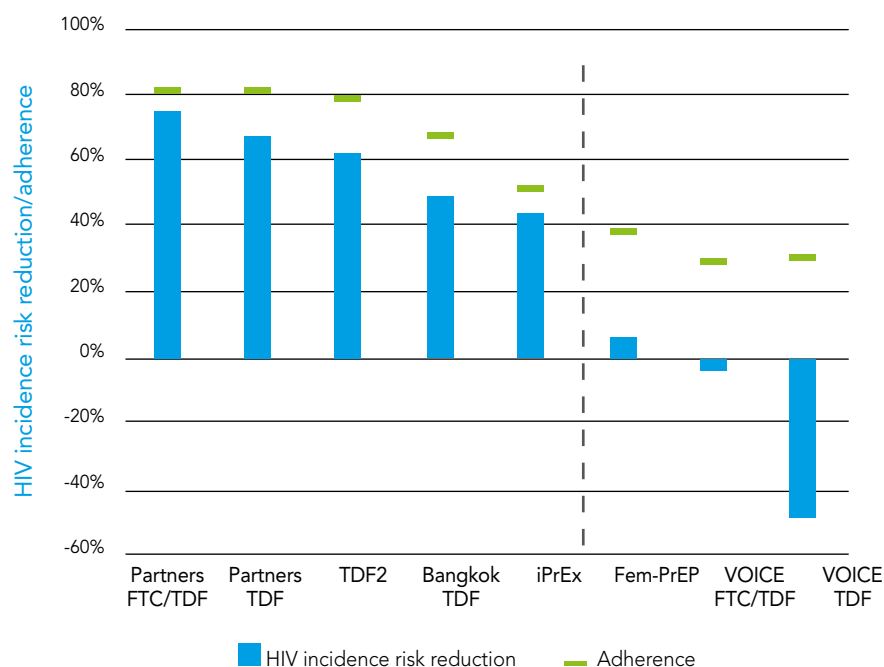
## Focus on high-impact programmes

Several HIV prevention methods have proved effective when used consistently, but no single prevention approach has the ability to stop the epidemic on its own. Combinations of prevention interventions are needed. Different settings and populations will require different combinations of interventions. The best HIV prevention impact comes from offering a package of interventions carefully selected to suit the epidemic setting and the population.

**Condoms remain the only available tool for triple protection against HIV, other STIs and unintended pregnancy.** Evidence from extensive research among discordant couples, in which one partner is infected with HIV and the other is not, shows that correct and consistent condom use significantly reduces the risk of HIV transmission both from men to women and from women to men (16). Laboratory studies show that male latex condoms are impermeable to infectious agents contained in genital fluids (17). Condom promotion for female sex workers has had a substantial impact in many epidemics. This has been well-documented in Thailand (18) and in various communities in India (19). In Zimbabwe (20) and South Africa (21), two high-prevalence countries, increased condom use has been found to contribute to reductions in HIV incidence. Among men who have sex with men, condom use has been shown to reduce HIV transmission during anal intercourse, and use of condom-compatible lubricants reduces condom failure (22).

**ARVs can prevent as well as treat HIV.** A study among discordant couples found that, when the HIV-positive partner initiated ART immediately, HIV transmission was reduced by 96% compared to delayed ART after a decline in the CD4 count or the onset of HIV-1-related symptoms (23). The effect of ART on HIV transmission is likely to be less outside perfect study conditions due to less consistent use of ART or to transmission from partners outside the relationship who may not be on ART. Nonetheless, data on population-level effects of treatment suggest that ART is making substantial contributions towards reducing the numbers of new infections (2).

**Figure 7. PrEP efficacy and adherence in major studies: PrEP works if taken**



Source: Prepared based on WHO, 2015 (24).

**Pre-exposure prophylaxis (PrEP) with ARVs can be highly effective** (25, 26, 27, 28). PrEP is the daily use of an antiretroviral medicine or medicines by uninfected people at risk of HIV in order to prevent infection. Consistent use is the key to the effectiveness of PrEP. Studies have shown that, when people adhered to daily use of PrEP, the reduction in HIV transmission was significant (Figure 7).

**Voluntary medical male circumcision (VMMC)** provides high protection to millions of men in sub-Saharan Africa. It reduces the risk of HIV transmission from females to males through sexual intercourse by 60%, according to three trials in South Africa (29), Kenya (30), and Uganda (31).

Strong evidence has existed for some time for the effectiveness of **harm reduction interventions such as needle-syringe programmes and opioid substitution therapy (OST)** among people who inject drugs. Needle-syringe programmes reduce the use of unsterile injecting equipment and they have contributed to reductions in HIV transmission in national programmes in countries such as China and Viet Nam among others (32, 33). A meta-analysis of nine studies showed that OST decreased HIV incidence by 54% by reducing high-risk drug-injecting behaviours (34). In Xichang City, Sichuan Province, China, following

*It is critical that national HIV prevention responses focus on combinations of these proven high-impact tools, including condoms, VMMC and PrEP.*

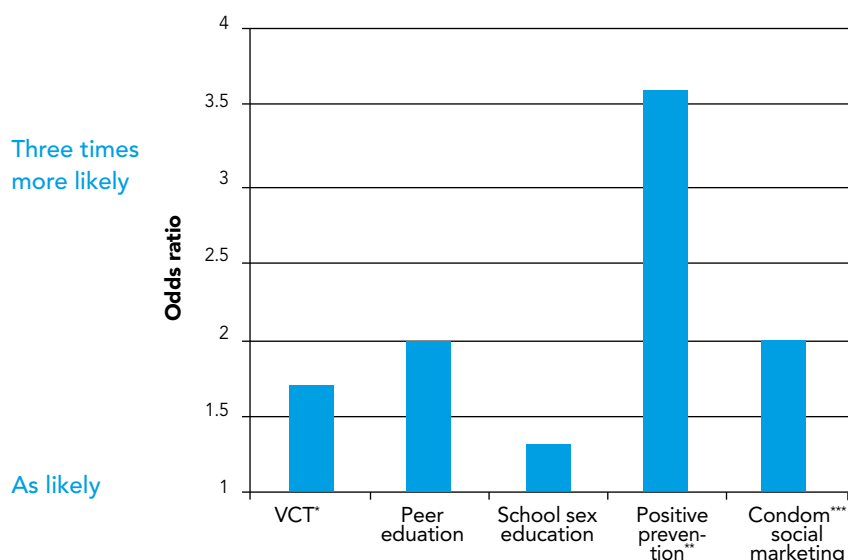
the implementation of harm reduction strategies (OST, needle–syringe distribution, condom distribution and peer outreach along with free access to ART), HIV incidence among people who inject drugs dropped from 2.5 to 0.6 cases per 100 person-years. In addition, the incidence of hepatitis B virus infections declined from 14.2 to 8.8 cases per 100 person-years (35). Adopting a harm reduction approach has multiple benefits for the health outcomes of people who use drugs, their families and the communities in which they live, and it is cost-effective (36).

Specific programmes using **communication and social change** approaches for HIV prevention can be effective. SHARE, an intervention combining communication on prevention of HIV and intimate partner violence, reduced HIV incidence by one-third in Rakai, Uganda (37).

There is some, limited evidence of effect, as measured by biological endpoints, of other social and behaviour change interventions for prevention such as HIV testing services (HTS) (38, 39, 40), peer education (41), mass-media communication (42), school-based sex education (43), family planning for HIV-infected women (44), income generation programmes (45) and behavioural counselling (for example, of discordant couples) (46). Most documented effects are in the form of self-reported behavioural change rather than biological outcomes such as reduction in HIV incidence (for example, see Figure 8), and behavioural studies point to moderate effects on sexual behaviour. Therefore, relying on any one of these HIV prevention approaches alone in any context would likely not be sufficient, but in combination with the biomedical interventions discussed above, they may increase impact. Many of these programmes have supportive functions. Mass and interpersonal communication are critical in demand generation for all HIV services.

Reviews examining effective HIV prevention strategies for specific groups at risk (47–52) or in specific regions (53–58) indicate that combinations of social change and communication interventions designed for specific populations and contexts have enhanced the adoption of HIV prevention behaviours and the uptake of services. Community empowerment and mobilization and addressing structural barriers in order to increase knowledge, accessibility and uptake of effective prevention constitute critical elements of combination prevention (59).

**Figure 8. Reported condom use after exposure to HIV programmes**



Likelihood of condom use at last sex comparing people exposed to the respective intervention to people not exposed to the intervention (expressed as odds ratios, based on meta-analyses).

\* VCT: voluntary counselling and testing.

\*\* Positive prevention in these studies entailed a package of prevention services for people living with HIV, including HIV testing services, post-test support, condom promotion and distribution and behavioural counselling.

\*\*\* Social marketing programmes were defined as programmes in which condoms were sold (commonly at subsidized prices), a local brand name was developed for the condoms and the condoms were marketed through a promotional campaign to increase sales.

Source: Denison et al., 2008 (38); Medley et al., 2009 (41); Fonner et al., 2014 (43); Kennedy et al., 2010 (60); Sweat et al., 2012 (61).

More than ever before, it is critical that national HIV prevention responses focus on combinations of these proven high-impact tools, including condoms, VMMC, PrEP and ART. Context-specific, evidence-based behavioural and structural programme elements are important as well. Approaches providing basic knowledge, awareness and general behaviour change messages need to be replaced with approaches informed by local evidence on factors shaping behaviours and programme models, which have been effective in achieving the intended outcomes in similar contexts.







### III. SYNERGIES: DEFINE EFFECTIVE PROGRAMME PACKAGES

People at risk of HIV infection have a cascade of HIV prevention needs. They need to be aware of risk, to learn how to protect themselves (including knowing their HIV status) and to have the means to protect themselves. They also need the power to make informed decisions about HIV prevention options and to receive support for their choices.

Packages of HIV services offered to all populations at risk and in all settings should consist of a combination of biomedical HIV prevention tools that includes condoms, testing and treatment along with demand generation and behavioural components. All packages require a strong community empowerment element and need to be linked to a wider system of critical enablers and structural health and development synergies, in particular health systems strengthening (including blood safety, STI treatment), social protection (including social transfers to vulnerable populations) and gender equality and norms. Adequate funding is needed to build community norms that support preventive behaviour as well as demand and adherence to prevention and treatment programmes

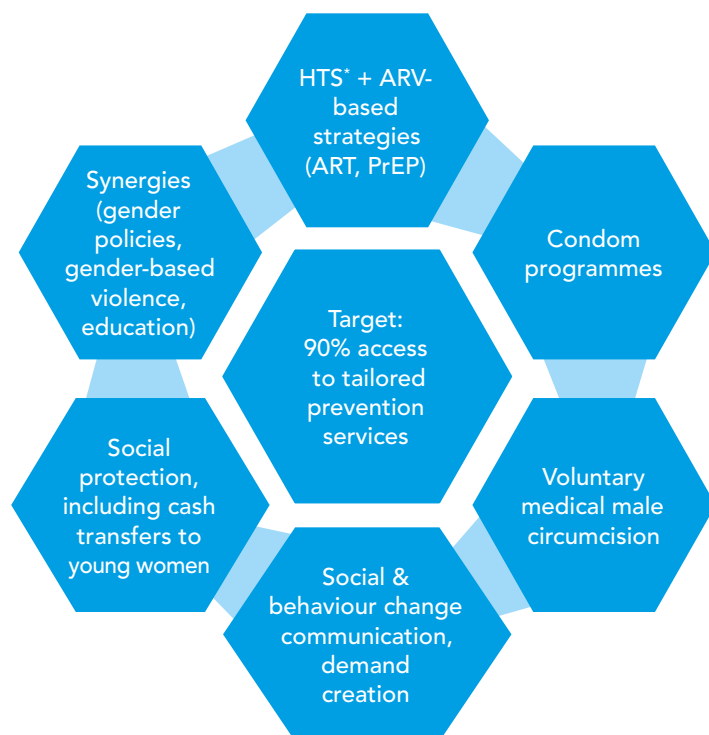
Inclusion of some components of population-specific prevention packages will depend on epidemiological, cultural or geographical context. For instance, while the World Health Organization recommends that PrEP be offered to gay men and other men who have sex with men as an effective component of combination prevention, not all gay men in all locations may be at high risk and need PrEP. Similarly, different economic empowerment strategies may be considered for young women and girls in different contexts in Africa. Also, roll-out of VMMC is recommended in 14 southern and eastern African countries, but policy-makers may decide to initially prioritize high-incidence locations within those countries.

Hence, the combination prevention packages presented in this section are examples that will need to be adapted for different settings. Furthermore, similar packages should also be offered to populations not discussed here, including transgender people and people in prisons and other closed settings.

#### HIV prevention packages for young women and their male partners

In high-prevalence countries in Africa, a large proportion of new HIV infections occurs among young women, ages 15–24, and their (often older) male partners. Increasing understanding of epidemiological, social and behavioural factors informs focused prevention packages for these epidemics. Figure 9 gives an example of a prevention package for high-prevalence sites in southern Africa.

**Figure 9. Example of a combination HIV prevention package for high-prevalence sites in southern Africa**



\* According to WHO, the term HIV testing services (HTS) is used to embrace the full range of services that should be provided together with HIV testing—counselling (pre-test information and post-test counselling); linkage to appropriate HIV prevention, treatment and care services and other clinical and support services; and coordination with laboratory services to support quality assurance and the delivery of correct results.

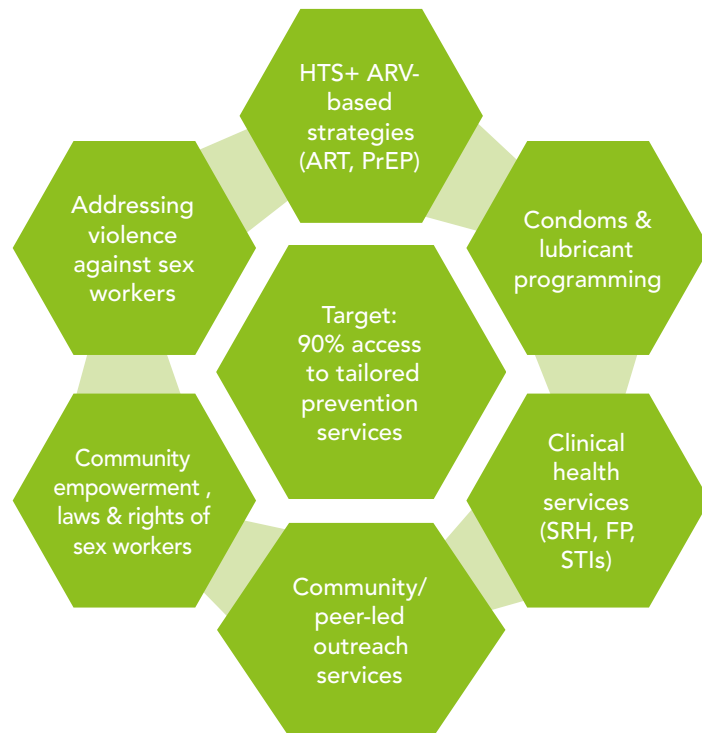
Source: WHO. Consolidated guidelines on HIV testing services. Geneva, July, 2015.  
[http://apps.who.int/iris/bitstream/10665/179870/1/9789241508926\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/179870/1/9789241508926_eng.pdf)

The various components of the package are complementary. ART reduces HIV transmission, while PrEP and VMMC reduce susceptibility. Condoms are relevant in all settings as an easily accessible HIV prevention option, including for short-term relationships. Social and behaviour change programmes need to be reinvigorated and focused more on social patterns and norms that influence key sexual risks such as having multiple partners and age-disparate sex. Cash transfers, incentives, and other economic empowerment strategies may have an impact on HIV incidence in some settings as well as other, wider health and social benefits (62, 63, 72). Generally, most of these will not be funded out of HIV budgets. The optimal combination of services may not be uniform nationally. Countries facing widespread epidemics will need to design combination packages specific to local settings.

## HIV prevention packages for key populations

HIV prevention packages for key populations include similar elements, in particular condom promotion and HIV testing followed by ARV-based strategies. In addition, programmes for key populations include elements that address their specific HIV prevention needs. Figures 10–12 provide examples of HIV prevention packages tailored to different key populations.

**Figure 10. Example of a combination HIV prevention package for sex workers**



Elsewhere, WHO, UNAIDS and partners provide more detailed guidance on HIV prevention packages for key populations (64, 65), including specifically for sex workers (66, 67). Specific guidance is also available on programmes for men who have sex with men and for transgender people (68) and for people who inject drugs (69).

Figure 11. Example of a combination HIV prevention package for men who have sex with men

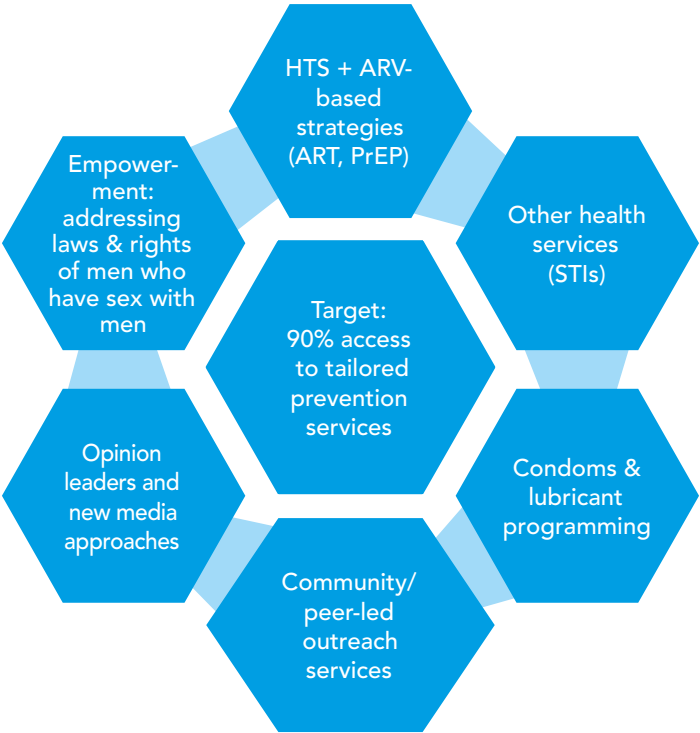
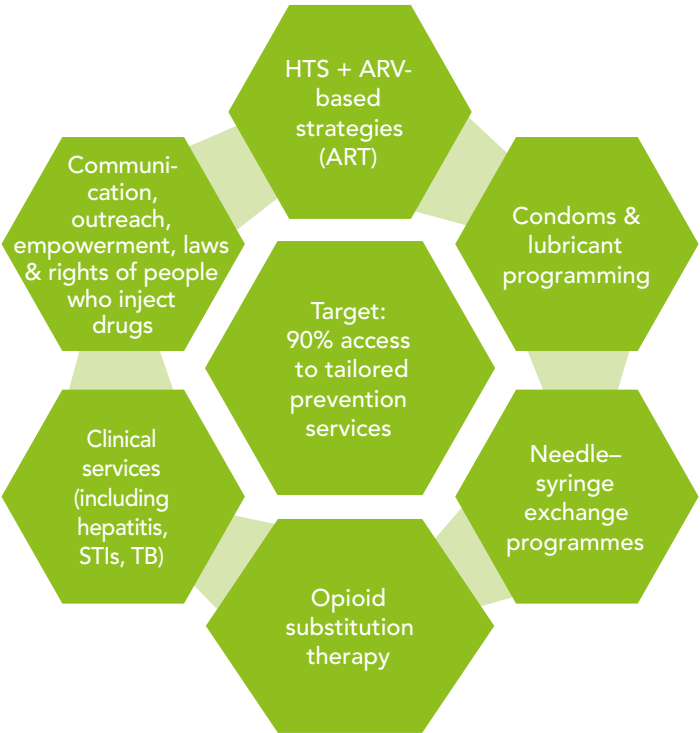


Figure 12. Example of a combination HIV prevention packages for people who inject drugs



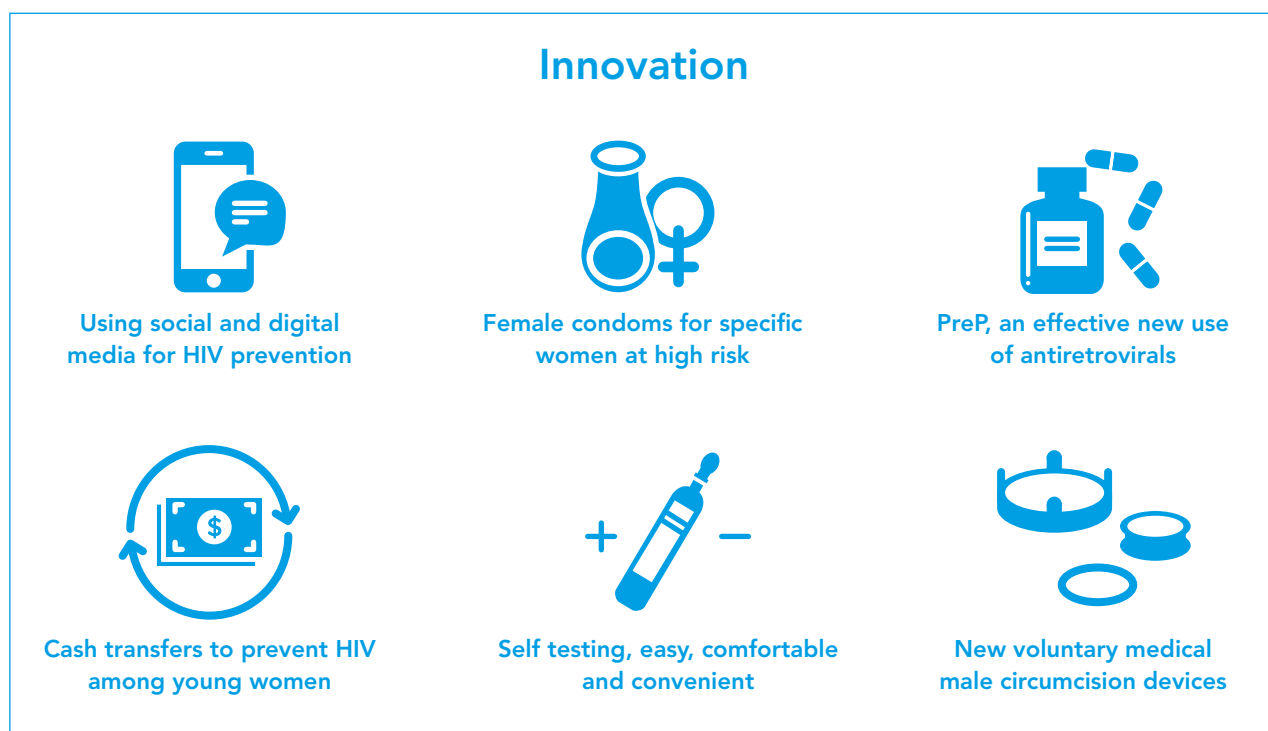




## IV. INNOVATION: USE NEW APPROACHES TO INCREASE PREVENTION EFFECTIVENESS

Innovation in HIV prevention during the past decade has yielded both new tools—VMMC, ART as prevention, PrEP—and new ways of delivering these services more effectively. Innovation has also brought better means of embedding national HIV programmes in broader social and health programmes.

Figure 13. Different innovations: ready for implementation at scale



*In a recent study men taking ARVs for PrEP four or more times per week were protected from HIV.*

### PrEP moves from effective trials to impact at scale

As summarized in Figure 7, studies have shown that daily oral PrEP, when taken as recommended, can be highly effective in preventing acquisition of HIV infection.

Like condoms and abstinence, PrEP works only when it is used consistently. In general, the greater the adherence to PrEP, the greater the protection afforded (70). In a recent study PrEP completely protected men who have sex with men from HIV infection when they had been taking four or more pills a week (71). PrEP has also been offered in pilot programmes for women at high risk, including sex workers; WHO broadened its recommendation for PrEP in September 2015 to offer PrEP to people at significant HIV risk as an additional prevention choice as part of combination prevention. Implementation guidance will be available in early 2016.

## Potential PrEP users

The challenge now is implementing PrEP. Implementation needs to be well-targeted to those with significant HIV risk—defined as being in communities where incidence is over 3%—and still reach the required scale. Operational issues that need consideration include testing, toxicity monitoring and support for adherence.

At the country level, implementation requires parallel action on several priorities. Countries need to accelerate the process of registering ARVs for PrEP use and develop national guidelines. Population groups that might benefit from PrEP—including people from key populations and locations—need to be identified, their preferences for access studied and different demand generation and adherence models developed and tested. In many communities the benefits of PrEP are not well-known, and efforts are needed to increase awareness and knowledge. Countries also need to overcome political obstacles to implementation of PrEP.

*Around 10 million men in eastern and southern Africa opted for voluntary medical male circumcision to prevent HIV infection.*

## Male circumcision grows thanks to societal change and new technologies

The progress on male circumcision in only one decade illustrates how much change is possible in a short time. After ecological and observational evidence had been available for some time, male circumcision was proven effective in three trials, in South Africa (29), Kenya (30), and Uganda (31); results were released between 2005 and 2007. Soon thereafter, WHO issued recommendations on male circumcision for HIV prevention. Although it took a few years for countries to develop policies and set up programmes, tremendous progress has been made in a number of countries; around 10 million men have received VMMC services since programmes started in eastern and southern Africa. In addition, broader societal change is taking place as many young men are coming forward for the procedure.

New circumcision devices have simplified the procedure. They have been found to be acceptable in many settings and have relatively low adverse events (73). In addition, VMMC devices can be applied by nurses and other health cadres besides doctors. This can speed roll-out in the African region.

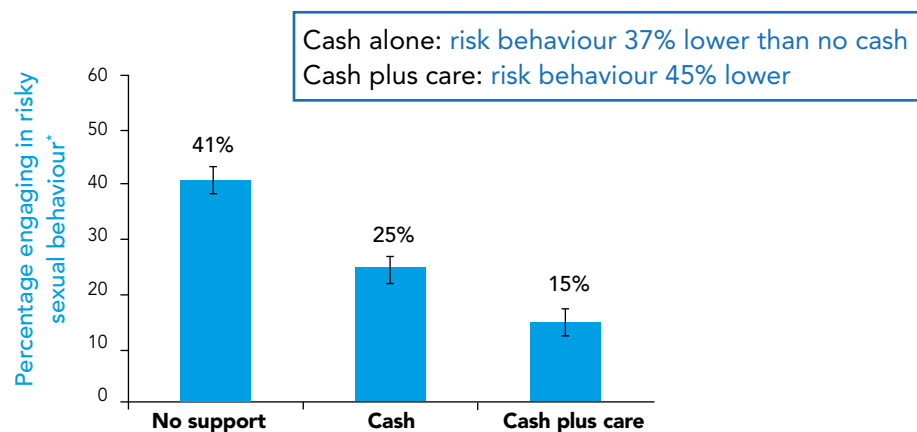




## Cash transfers may help young women avoid risk

In South Africa a national longitudinal study of an ongoing publically funded social grant programme found that, among more than 3000 families receiving regular child support or foster child grants, adolescent girls reduced transactional sex by 53% and age-disparate sex by 71% (see Figure 14) (74). This is not an isolated example. However, in 2015, the findings of two further studies were released showing no impact of cash transfers on HIV incidence.

**Figure 14. Effect of cash transfers and care on sexual risk behaviour among young women, South Africa**



\* Risk behaviours included multiple partners and age-disparate relationships. Reductions in levels of risk behaviour were expressed as odds ratios comparing "Cash" and "Cash plus care" to "No support"

Source: Cluver et al., 2013 (74).

Cash transfers are an example of an intervention that was not primarily intended to reduce HIV infection but that may, in specific social contexts, help to do so (75). Some young women have sexual partnerships with older men to support immediate economic needs or in exchange for consumer goods. Older men, who are more likely to be HIV-positive than younger men, put these young women at greater risk than their peers would. A study in Malawi (72), among others, suggests that, when young women are given cash transfers, they chose to have fewer relationships with older men and at the end of the study HIV prevalence among women receiving cash transfers was around 60% lower. In that study cash transfers also increased school attendance and reduced teenage pregnancy and child marriage.

For any social programme the potential effect of cash transfers on HIV prevention needs to be evaluated in the specific context. Cash transfers will always need to be complemented by other HIV prevention programmes.

## Digital social media: a new tool to support high-impact programmes

Even in low-income countries mobile phone ownership and Internet access have grown considerably in recent years, changing how people interact and receive information. These new technologies are helping sex workers find clients and men who have sex with men to find partners. Leveraging the same new media approaches for HIV prevention and social mobilization are potentially powerful ways to reach many who are otherwise hard to reach and to develop new ways of increasing knowledge about risk and prevention options. Large-scale social and behaviour interventions in China, South Africa and Thailand have used media in new ways for HIV prevention information and service referrals.

**Blued, a dating app in China**, connects gay men and other men who have sex with men and provides HIV information delivered in an entertaining format, with linkages to HIV testing services.

**Young Africa Live (YAL)** is an African entertainment-oriented, interactive mobile platform for information and discussions. It enables young people to talk about topics that affect their daily lives including sex, HIV, rape and gender issues, as well as where to get tested for HIV.

In Africa **Shuga**, a television and radio soap opera, which has an interactive internet platform and is also present on Youtube examines various themes related to HIV. These include HIV testing, counselling, condom use, positive prevention, gender inequality and sexual violence, transactional sex, alcohol abuse and the role of multiple concurrent partnerships in driving the HIV epidemic. *Shuga* started in 2009 in Kenya as a TV series, became a hit and since has aired in 40 African countries and on over 70 international TV stations.

New approaches based on prompting and tracking by means of short message service (SMS) texts are helping people navigate between different community- and facility-based services and helping retain people at risk in prevention programmes and people living with HIV in treatment and care.

Approaches such as these enable HIV prevention messages to reach populations that are harder to reach through health facilities, schools or conventional media. This includes groups faced with high levels of stigma, such as men who have sex with men and sex workers, and people who are not accessing services but are essential to reach for prevention, such as out-of-school youth and men.

## iMonitor

*iMonitor is an application for smartphones, tablets, computers and other digital media that provide people seeking HIV services with a simple, real-time tool for monitoring and evaluating certain public HIV services. It creates an opportunity for dialogue with authorities to address challenges and enhance programme quality. The application, which was first tested in Indonesia, Thailand and the Philippines enables people to log “alerts” if access to ARV treatment, condoms and related medicines and HIV testing is not available in health centres. It also enables people to report violence and discrimination in the workplace. In addition, iMonitor informs people of the locations of all health centres for HIV testing and other health services.*

## New HIV tests help change service delivery models

The field of HIV testing has also seen major innovations, including rapid diagnostic tests and community-based testing service models as well as self-testing. If these innovations are strategically linked to other HIV services and communications, they can provide additional entry points for treatment and prevention. Self-testing has the potential to increase access to HIV testing particularly for groups that are hard to reach with conventional, provider-initiated testing, such as men and adolescents. Different modalities for the sale and distribution of HIV self-testing kits need to be tested and evaluated to maximize benefits and minimize harm in different settings.

## Innovation in wider social and health programmes

HIV prevention may spearhead innovations in the wider health and social sectors. In epidemics affecting key populations this innovation includes rights-based approaches for sex workers, men who have sex with men and transgender people, access to services in prisons and other closed settings and advocacy for wider health and social services, including housing, for people who inject drugs. In high-prevalence settings synergies with programmes addressing gender-based violence, labour migration and different types of economic empowerment of young women have been explored. Implementing such initiatives can inspire and advocate change in these areas. In an innovative programme in South Africa, for example, some mining companies provide family housing to reduce spousal and family separation (76), which may contribute to reductions in vulnerability and risk practices (77).

Just as innovation has changed the landscape of HIV prevention in the past decade, innovation will remain critical for HIV prevention in the coming decade, as basic research progresses on new tools such as vaccines, existing tools such as condoms and VMMC improve, and innovative ways emerge to deliver HIV prevention programmes effectively and at scale.



## V. SCALE AND INTENSITY: MAKE SURE PREVENTION COVERS THE NEED

Lack of emphasis on delivering HIV prevention interventions at full scale has been a major shortcoming of HIV prevention programmes. Implementing HIV prevention programmes with sufficient intensity and coverage, and over a long enough period of time, is critical for success. Despite a wealth of strategies and policy papers, HIV prevention coverage has been fragmented. Wide coverage of quality HIV prevention services is still the exception. This shortcoming can be overcome. Examples of wide coverage do exist for virtually all priority HIV prevention programmes. With a clearly defined focus and appropriate planning, wide coverage can be achieved in a fairly short time.

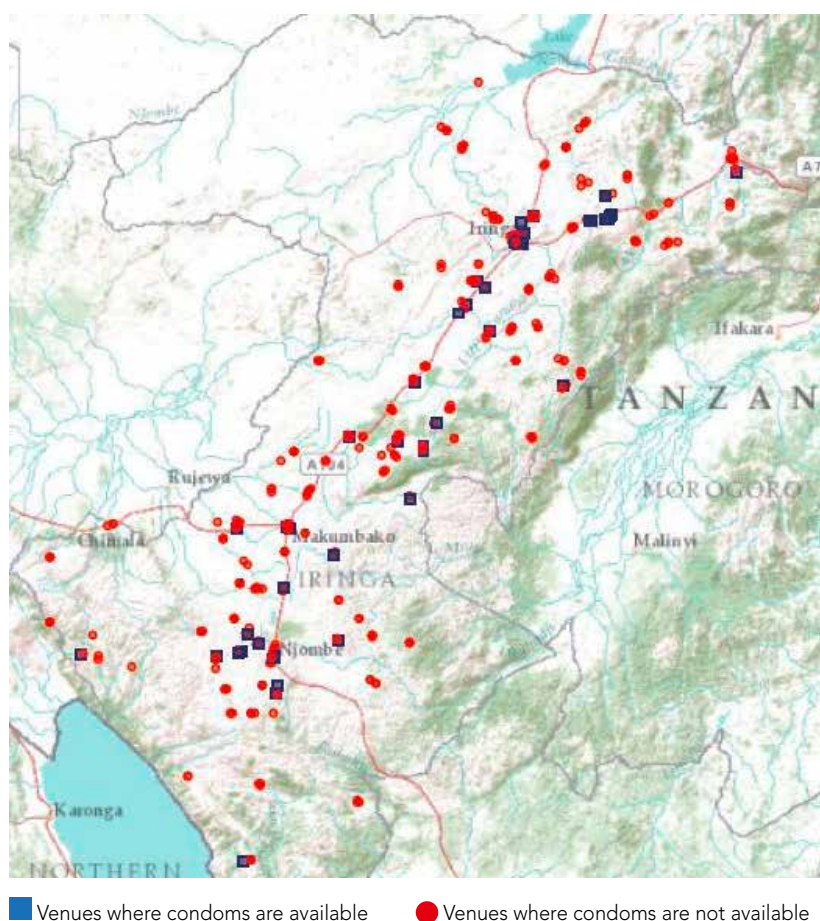
### HIV prevention works when done at scale and with intensity

*In India, South Africa, Thailand and Zimbabwe, when condom supply increased, use increased, and HIV incidence declined.*

**Condom programmes** illustrate how—while high coverage and impact have been achieved in some countries—major coverage gaps persist in some areas even three decades into the HIV epidemic. Mathematical modelling based on data from South Africa shows that condom use increased when the distribution of condoms increased, leading to declines in national HIV incidence between 2000 and 2008 (21). What facilitated success in such countries as India, South Africa, Thailand and Zimbabwe is the widespread availability of condoms and intensive promotion addressing priority populations combined with strong community support. Both intensive social marketing programmes and public-sector distribution have contributed to high use.

What has limited the population-level effect of condoms—particularly in generalized epidemics—is their inconsistent use, which is due to a combination of reasons. Condom procurement and distribution have not been scaled-up sufficiently in many countries (78), despite the relatively low cost of male condoms—less than US\$ 4 for an annual supply for a couple (79). Availability of condoms in sub-Saharan Africa varies greatly, from over 40 condoms per man per year in some countries to fewer than five in others; higher levels of distribution are associated with higher self-reported levels of use (80). Condom availability varies greatly within countries as well (Figure 15). Health facilities continue to experience stock-outs (81), and young people's access to condoms remains constrained by social norms and health workers' negative attitudes. Condom use at last sex with non-regular partners has reached about 80% among men in countries as diverse as Cambodia, Kyrgyzstan and Namibia. It is considerably lower (40–65%) in most other countries, however, including some countries greatly affected by HIV, such as Lesotho, Mozambique and Zambia, and it is as low as 10–30% in other African countries (82).

**Figure 15. Using local data to track coverage and supply gaps and develop delivery solutions: condom availability mapping in Iringa, United Republic of Tanzania**



Source: Weir et al., 2012 (83).

This wide variation points up needs for improvement of local logistics management, distribution and demand generation, as well as the need to set country and subnational benchmarks for distribution with real-time monitoring of distribution and sales, as done in the private sector. Condom sales have increased substantially where condom distribution has been linked to private-sector logistics for other commodities such as soft drinks, as, for example, in South Africa's condom social marketing programme. The same effort, commitment and logistics need to be applied to condom distribution elsewhere. HIV prevention programmes need to ensure that a variety of choices of high-quality condoms are accessible to those who need them when they need them and that they have the knowledge, skills and commitment to use them correctly and consistently.

Although 10 million men have opted for **voluntary medical male circumcision** in eastern and southern Africa, substantial gaps in coverage remain a decade after release of the results of the first successful trial. Scaling up VMMC programmes in the priority countries in eastern and southern Africa to 20 million male circumcisions by 2020 is ambitious but not impossible, given that some areas have already achieved scale up. Reaching full scale for VMMC programmes requires availability of the service, innovative delivery models including task sharing and, potentially, choice between surgery and the new circumcision devices. Intensive demand generation needs to be based on evidence concerning the public's understanding of VMMC efficacy, how service quality is perceived and which norms are barriers or facilitators of VMMC uptake. This demand generation can be complemented by outreach, including school-based campaigns, outreach to places frequented by men and promotion by role models.

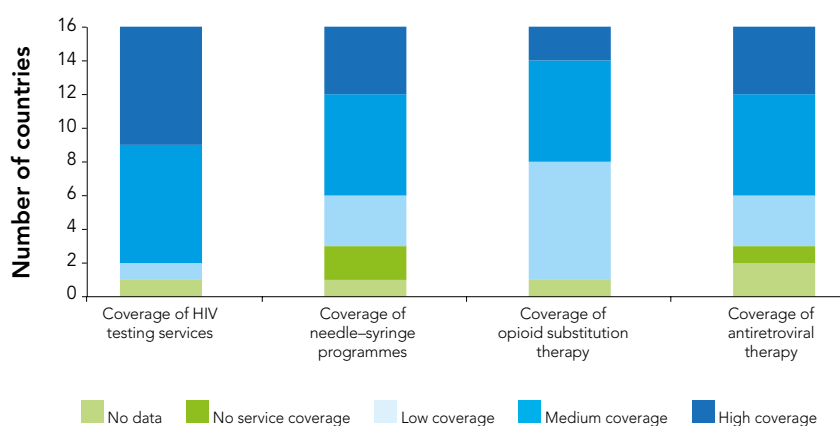
**HIV prevention efforts for key populations**, such as people who inject drugs, gay men and other men who have sex with men, sex workers and transgender people, have all shown results when the services are available, community-led and responsive to community needs (84). Many national HIV programmes for key populations, however, have limited scale, scope and intensity, and reviews have found that the coverage of prevention efforts for those at highest risk is insufficient. Most HIV prevention projects for sex workers in sub-Saharan Africa, for example, are small, local-level efforts providing condoms and occasionally HIV testing. They do not have the required scale, are often not community-led or sufficiently tailored to sex workers' needs, nor have they yet incorporated new programme elements with the potential to have a large impact, such as PrEP (85).

Programme coverage for men who have sex with men is similarly low with some exceptions. Countries report that programmes reach between 12% and 70% of men who have sex with men with any type of service. These figures include regions such as Latin America and Asia, where men who have sex with men account for the majority of HIV infections (86). In sub-Saharan Africa only one of every 10 gay men and other men who have sex with men receives a basic package of HIV prevention interventions. This can change: a programme in Ghana, for example, reached around 90% of the estimated number men who have sex with men in the country through a combination of community and new media outreach approaches (87).

**HIV prevention programmes for young people**, who are an important target population for HIV prevention activities in high prevalence settings, also have limited coverage in many countries. In southern and eastern Africa, fewer than four of every 10 young people has full basic knowledge about HIV transmission, and many adolescents and young people who are at risk do not believe they are at risk of HIV (88).

A crucial coverage gap also exists for **people who inject drugs**, one of the populations at highest risk for HIV infection. This gap occurs even though all available evidence shows that harm reduction packages, including the provision of clean injection equipment, are one of the most effective HIV prevention interventions available. Despite political and legal barriers that limit these programmes in many places, it is possible to increase commitment and coverage. Events demonstrate this in four of the six countries most affected by HIV due to injecting drug use. A 2014 review shows that China, Malaysia, Ukraine and Viet Nam have shifted their policies towards increased HIV service coverage for people who inject drugs. China and Viet Nam have expanded HIV treatment and opioid substitution therapy, and Malaysia has moved from a punitive to an evidence-informed HIV response (89). Filling critical gaps in commitment and action is essential now if we are to reach 2020 targets.

**Figure 16. Limited access as a factor in prevention performance: harm reduction services for people who inject drugs. Number of countries reporting low, medium and high HIV prevention service coverage**



Source: UNODC, 2014 (90). 16 countries have been assessed for this figure.

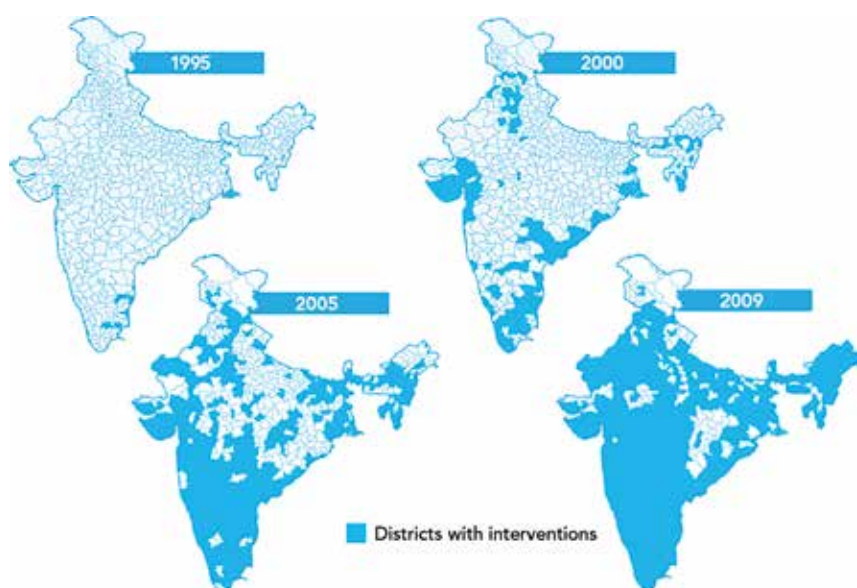


With the exception of HIV testing coverage, the majority of priority countries report low coverage of programmes for people who inject drugs. Less than 30% of survey priority countries reported high coverage of needle-syringe programmes, opioid substitution therapy and ART.

As demonstrated in India, it is possible to provide wide coverage of HIV prevention at a meaningful scale for large populations. Over a very short period of time, a new model of targeted interventions for sex workers, introduced in 1998, was quickly scaled up, and most areas had HIV prevention activities by 2005. The government of India adopted this scaling up, and as a result by 2009 a robust mix of sex work interventions existed nearly everywhere they were needed (Figure 17) (11).

As a result of the scale up, reductions in HIV and STI prevalence were recorded. A modelling analysis for south India suggested that 57% of new infections were averted over a 10-year period, translating to an estimated 606,000 new infections averted in 69 priority districts in south India (19).

**Figure 17. Change in coverage of HIV prevention programmes for female sex workers in India: coverage of targeted intervention (TI) project**



Source: Kumar et al., 2011 (11).



## VI. ACCOUNTABILITY: ENSURE THAT EACH PROGRAMME DOES ITS PART AND RECEIVES THE SUPPORT IT NEEDS

### *Programming to reach targets: the Kenya HIV Prevention Revolution Roadmap*

- Countdown to 2020 and 2030.
- From a national to geographically-specific (counties, cities) approach.
- From single interventions to population-specific packages.
- From a bio medically dominated to a combination HIV prevention approach, including behavioural and structural interventions.

India was able to develop and deliver a comprehensive HIV prevention programme for people most at risk in states with very large populations in a five-year period (91). In addition to extensive community involvement, the strategy included setting ambitious but realistic targets and developing management plans that would enable the programme to reach these targets. Close monitoring and needed course corrections were also essential to success (Figure 18).

This comprehensive management of HIV programmes is a useful example of clear strategy and results-orientation, which are key features of the effective programming required to reach Fast-Track HIV prevention targets.

Systematic and well-managed coordination between sectors nationally and in key locations is critical for rapid progress. In cities where key population programmes are a high priority, creating an enabling policy environment for service delivery, scale-up and uptake, by engaging health administrators and law enforcement, is particularly important. Similarly, where the sexual and reproductive health of young people is the major concern, and gender inequality is a major driver of the epidemic, engaging education, social welfare and gender officials is critical.

Furthermore, national and local programmes can be well-intentioned, but short-comings may emerge during national planning. HIV prevention programmes may lack focus, quality and scale, so that resources are stretched and priorities difficult to establish or maintain. Additional challenges are commonly observed in developing implementable plans.

Countries have gained valuable experience in the application of good strategic and management principles to the development of HIV prevention programmes in some contexts. Kenya's Prevention Revolution Roadmap, for instance, has clearly identified not only priority populations and intervention packages but also the locations where efforts should be carried out.

Each country and each subnational unit (city or district) should reassess its targets and design programmes with the mix of interventions, scale and intensity necessary to reach Fast-Track targets.

**Figure 18. India's Management Model for Prevention for Key Populations through Civil Society Organizations**

Guiding Principles	One single plan, one management authority, one monitoring framework	Equity	Gender
Respect for the rights of the PLHIV	Civil society representation and participation	Improved public private partnerships	Evidence based and result oriented programme implementation
PLANNING	APPROACHES	MONITORING & EVALUATION	MANAGEMENT STRUCTURES
<b>Evidence Based Planning</b> (Districts categorized based on HIV prevalence, key population number and vulnerability)	Mapping, HIV Sentinel Surveillance; Biological and Behavioral Studies, Operational Research, data triangulation and Validation	<b>National Monitoring Mechanism</b> Supportive monthly supervision and mentoring; High-quality Strategic Information Management System; quarterly grading of implementers on critical performance indicators; periodic 3rd party evaluation	National Technical Support Unit provides management and technical expertise; specific unit for management of condom supply
<b>Designing for Scale with prevention focus</b> (budget allocated to cover >1 million key population Prevention services)	Technical & Operational Guideline; Commodity Standardization; Unit Costing; Uniform Training Modules		
<b>Communities at Centre</b> (> than 150 implementing Community Based Organizations)	Community mobilization and civil society partnerships, peer-led outreach, condom promotion, harm reduction for PWIDs, STI treatment, HIV test and treatment		
<b>Encouraging Innovation</b> (public and private agencies help develop delivery models)	Use of new information technology; measuring community mobilization and youth engagement	<b>District Monitoring</b> - Intensive 3-days onsite visits each month to review implementation - Each CBO visited once a month - District consolidates all reports, finds action points and linkages with other stakeholders	District AIDS Prevention and Control Units in 1818 high prevalence districts; 17 state level Technical Support Units State Training Resource Centres for capacity building of implementer staff
<b>Sustainability</b> (2/3 government funded)	Integration with health system & mainstreaming with 14 ministries; clear road map to reduce stigma & discrimination		
<b>Country Stewardship</b> (Prime Minister leads)	PM is the chairman of National Parliamentary Forum for HIV/AIDS; state legislative forums		

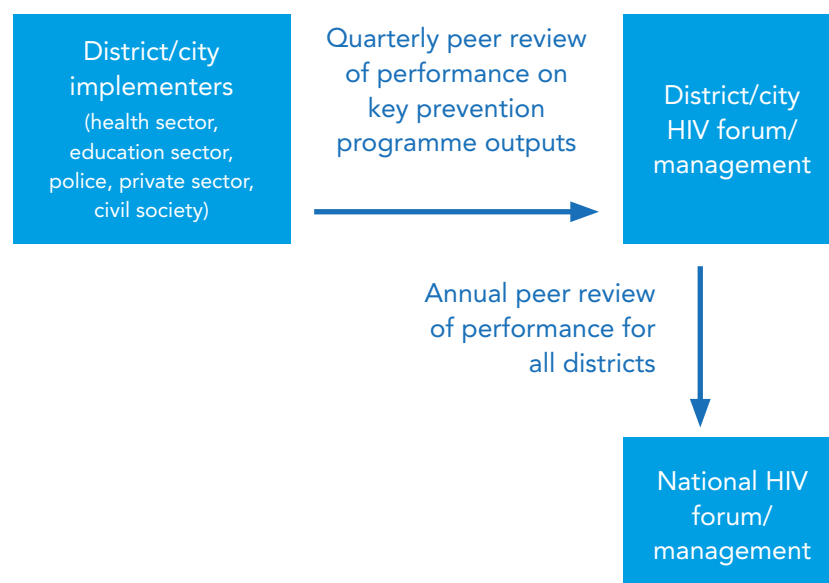
Source: NACO, India

## Accountability framework

Once the strategic focus and priorities of a national HIV prevention strategy have been defined, a sound accountability framework and management system must be set up to:

- Develop a pragmatic implementation plan:
  - Estimate the numbers and map the location of people in need.
  - Cost out the minimum service packages.
  - Develop a scale-up plan with clear milestones and quarterly annual targets at national and subnational levels.
  - Establish baselines and set up a rigorous impact evaluation framework.
- Establish or adapt programme delivery systems.
- Develop a performance management mechanism and culture of quarterly peer review at the local level and annual review at subnational and national levels (see Figure 18).
- Establish service delivery capacity in all targeted facilities and outreach teams over the first one to two years.
- Set coverage targets, for example, “80% of the population to be reached by the end of year 3”, and implement programmes accordingly.
- Conduct outcome evaluations aiming for early results in areas covered early (after year 2) and outcome results achieved at scale after year 4.
- Conduct rigorous impact evaluation every five years.

**Figure 19. Management mechanism for a national HIV prevention programme**



At each new phase of the response, the accountability for making progress and achieving prevention results cannot lie just with a national AIDS programme or the ministry of health. Achieving dramatic reductions in new HIV infections will require other sectors, including social welfare, education, transport and trade, to play their roles and to create an environment in which there are real choices available that encourage healthy behaviours, as well as use of HIV prevention tools including condoms, PrEP and harm reduction.

Governments, including their treasuries, and international donors will need to allocate the resources required. HIV prevention is not expensive. In fact, implemented at sufficient scale and with sufficient intensity, it saves money. Even more importantly, communities will need to use their power to push this Fast-Track HIV prevention targets and hold governments, donors and themselves accountable. With community ownership, the target of reducing new HIV infections by 75% by 2020, and virtually eliminating them by 2030, can be achieved.

*Implemented at  
sufficient scale  
and with sufficient  
intensity, prevention  
saves money.*

## CONCLUSION

The goals of reducing new HIV infections to fewer than 500 000 per year by 2020 and fewer than 200,000 new infections by 2030. were inconceivable not long ago. Now, with new advances in HIV prevention and treatment, and real progress in a number of key countries, they are within reach. However, these goals will be achieved only with concerted and substantially accelerated efforts.

The combination prevention approach described in this document is essential. Countries need **to recommit** to such an approach, seriously **examine the focus, scale, mix and intensity of their HIV prevention programmes and improve performance and increase coverage.** The opportunity to dramatically reduce and virtually end the epidemic should not be missed. The opportunity to end the AIDS epidemic as a public health threat by 2030 should not be missed.

## ABBREVIATIONS

ART	antiretroviral therapy
ARV	antiretroviral medicine
FP	family planning
HTS	HIV testing services
OST	opioid substitution therapy
PrEP	pre-exposure prophylaxis
SRH	sexual and reproductive health
STIs	sexually transmitted infections
TI	targeted interventions (India)
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNODC	United Nations Office on Drugs and Crime
UNFPA	United Nations Population Fund
VCT	voluntary counselling and testing
VMMC	voluntary medical male circumcision
WHO	World Health Organization



## REFERENCES

1. UNAIDS. The gap report. Geneva: Joint United Nations Programme on HIV/AIDS; 2014 (<http://www.unaids.org/en/resources/campaigns/2014/2014gapreport/gapreport>, accessed 2 July 2015).
2. Tanser F, Barnighausen T, Grapsa E, Zaidi J, Newell ML. High coverage of ART associated with decline in risk of HIV acquisition in rural KwaZulu-Natal, South Africa. *Sci*. 2013;339(6122):966–71.
3. Implementing Fast-Track: accelerating action to end the AIDS epidemic by 2030. Geneva: Joint United Nations Programme on HIV/AIDS; 2015.
4. Gouws E. Trends in HIV prevalence and sexual behaviour among young people aged 15–24 years in countries most affected by HIV. *Sex Transm Infect*. 86. 2013 Suppl 2: ii72–ii83.
5. Shisana O, Rehle T, Simbayi LC, Zuma K, Jooste S, Zungu N *et al*. South African National HIV Prevalence, Incidence and Behaviour Survey 2012. Cape Town: HSRC Press; 2014.
6. UNAIDS. Global Plan Towards the Elimination of New HIV Infections among Children and Keeping their Mothers Alive. Geneva 2011).
7. HIV resource needs modeling. Geneva: Joint United Nations Programme on HIV/AIDS; 2014.
8. Tanser F, Barnighausen T, Cooke G, Newell M. Localized spatial clustering of HIV infections in a widely disseminated rural South African epidemic. *Int J Epidemiol*. 2009;38:1008–16.
9. Larmarange J, Vallo R, Yaro S, Msellati P et Méda N. Methods for mapping regional trends of HIV prevalence from Demographic and Health Surveys (DHS). *European Journal of Geography*. (<http://cybergeo.revues.org/24606> accessed 13 July 2015).
10. Anderson SJ, Cherutich P, Kilonzo N, Cremin I, Fecht D, Kimanga, D *et al*. Maximising the effect of combination HIV prevention through prioritisation of the people and places in greatest need: a modelling study. *Lancet*. 2014;384(9939):249–56.
11. Kumar R, Mehendale SM, Panda S, Venkatesh S, Lakshmi P, Kaur M *et al*. Impact of targeted interventions on heterosexual transmission of HIV in India. *BMC Public Health*. 2011;11:549.
12. Hallett T. Using information on epidemic heterogeneities in resource allocation. Paper presented at Meeting Identifying Populations at Greatest Risk of Infections—Geographic Hotspots and Key Populations; 2013 July 25–26; Geneva, Switzerland.
13. UNAIDS. Modeling the expected short-term distribution of new HIV infections by modes of transmission. Guidelines. Geneva: UNAIDS, 2012.
14. Steen R, Hontelez J, Veraart A, White RG, de Vlas SJ. Looking upstream to prevent HIV transmission: can interventions with sex workers alter the course of HIV epidemics in Africa as they did in Asia? *AIDS*. 2014;28(6):891–99.
15. Vitek CR, Cakalo J-I, Kruglov YV, Dumchev KV, Salyuk TO, Baughman AL *et al*. Slowing of the HIV epidemic in Ukraine: evidence from case reporting and key population surveys, 2005–2012. *PLoS ONE*. 2014;9(9):e103657. doi:10.1371/journal.pone.010365.
16. Holmes K, Levine R, Weaver M. Effectiveness of condoms in preventing sexually transmitted infections. *Bull World Health Orga*. 2004;82(6):454–61.
17. Information note on effectiveness of condoms in preventing sexually transmitted infections including HIV. Geneva: World Health Organization; Joint United Nations Programme on HIV/AIDS; 2001.
18. Relationships of HIV and STD declines in Thailand to behavioural change. A synthesis of existing studies. Geneva: Joint United Nations Programme on HIV/AIDS; 1998.

19. Pickles M, Boily MC, Vickerman P, Lowndes CM, Moses S, Blanchard JF *et al.* Assessment of the population-level effectiveness of the Avahan HIV-prevention programme in South India: a preplanned, causal-pathway-based modelling analysis. *Lancet Glob Health.* 2013;1(5):e289–99.
20. Halperin DT, Mugurungi O, Hallett TB, Muchini B, Campbell B, Magure T *et al.* A surprising prevention success: why did the HIV epidemic decline in Zimbabwe? *PLoS Med.* 2011;8(2):e1000414.
21. Johnson LF, Hallett TB, Rehle TM, Dorrington RE. The effect of changes in condom usage and antiretroviral treatment coverage on human immunodeficiency virus incidence in South Africa: a model-based analysis. *J R Soc Interface.* 2012;9.
22. Strömdahl S, Hickson F, Pharris A, Sabido M, Baral S, Thorson A. A systematic review of evidence to inform HIV prevention interventions among men who have sex with men in Europe. *Euro Surveill.* 2015;20(15):pii=21096.
23. Cohen M, Chen Y, McCauley M, Gamble T, Hosseinipour M, Kumarasamy N *et al.* Prevention of HIV-1 infection with early antiretroviral therapy. *N Engl J Med.* 2011;365(6):493–505.
24. WHO technical update on pre-exposure prophylaxis (PrEP). Geneva: World Health Organization; 2015.
25. Choopanya K, Martin M, Suntharasamai P, Sangkum U, Mock PA, Leethochawalit M *et al.* Antiretroviral prophylaxis for HIV infection in injecting drug users in Bangkok, Thailand (the Bangkok Tenofovir Study): a randomised, double-blind, placebo-controlled phase 3 trial. *Lancet.* 2013;381:2083–90.
26. Grant RM, Lama JR, Anderson PL, McMahan V, Liu AY, Vargas L *et al.* Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *N Engl J Med.* 2010;363:2587–99.
27. Thigpen MC, Kebaabetswe PM, Paxton LA, Smith DK, Rose CE, Segolodi TM *et al.* Antiretroviral preexposure prophylaxis for heterosexual HIV transmission in Botswana. *N Engl J Med.* 2012;367:423–34.
28. Baeten JM, Donnell D, Ndase P, Mugo NR, Campbell JD, Wangisi J *et al.* Antiretroviral prophylaxis for HIV prevention in heterosexual men and women. *N Engl J Med.* 2012;367:399–410.
29. Auvert B, Taljaard D, Lagarde E, *et al.* Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: The ANRS 1265 Trial. *PLoS Med.* 2005;2(11):1112. DOI: 10.1371/journal.pmed.0020298.
30. Bailey R, Moses S, Parker C, Agot K, Maclean I, Krieger JN *et al.* Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *Lancet.* 2007;369(9562):643–56.
31. Gray R, Kigozi G, Serwadda D, Makumbi F, Watya S, Nalugoda F *et al.* Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial. *Lancet.* 2007;369(9562):657–66.
32. Aspinall EJ, Nambiar D, Goldberg DJ, Hickman M, Weir A, Van Velzen E *et al.* Are needle and syringe programmes associated with a reduction in HIV transmission among people who inject drugs: a systematic review and meta-analysis. *Int J Epidemiol.* 2014;43(1):235–48.
33. Des Jarlais D, Feelemyer JP, Modi S, Abdul-Quader A, Hagan H. High coverage needle/ syringe programs for people who inject drugs in low and middle income countries: a systematic review. *BMC Pub Health.* 2013;13:53.

34. MacArthur GJ, Minozzi S, Martin N, Vickerman P, Deren S, Bruneau J. Opiate substitution treatment and HIV transmission in people who inject drugs: systematic review and meta-analysis. *BMJ*. 2012;345.
35. Ruan Y, Liang S, Zhu J, Li X, Pan SW, Liu Q *et al*. Evaluation of harm reduction programmes on seroincidence of HIV, hepatitis B and C, syphilis among intravenous drug users in southwest China. *Sex Transm Dis*. 2013;40(4):323–328. doi:10.1097/OLQ.0b013e31827fd4d4.
36. Tanguay P. Policy responses to drug issues in Malaysia. IDPC briefing paper. London: International Drug Policy Consortium; 2011.
37. Wagman JA, Gray R, Campbell J, Thoma M, Ndyababo A, Ssekasanvu J *et al*. Effectiveness of an integrated intimate partner violence and HIV prevention intervention in Rakai, Uganda: analysis of an intervention in an existing cluster randomised cohort. *Lancet Glob Health*. 2015;3(1):e23–e33.
38. Denison JA, O'Reilly KR, Schmid GP, Kennedy CE, Sweat MD. HIV voluntary counseling and testing and behavioural risk reduction in developing countries: a meta-analysis, 1990–2005. *AIDS Behav*. 2008;12(3):363–73.
39. Kennedy CE, Fonner VA, Sweat MD, Okero FA, Baggaley R, O'Reilly KR. Provider-initiated HIV testing and counseling in low- and middle-income countries: a systematic review. *AIDS Behav*. 2013;17(5):1571–90.
40. Fonner VA, Denison J, Kennedy CE, O'Reilly K, Sweat M. Voluntary counseling and testing (VCT) for changing HIV-related risk behaviour in developing countries. *Cochrane Database Syst Rev*. 2012;9:CD001224.
41. Medley A, Kennedy C, O'Reilly K, Sweat M. Effectiveness of peer education interventions for HIV prevention in developing countries: a systematic review and meta-analysis. *AIDS Educ Prev*. 2009;21(3):181–206.
42. Bertrand JT, O'Reilly K, Denison J, Anhang R, Sweat M. Systematic review of the effectiveness of mass communication programs to change HIV/AIDS-related behaviours in developing countries. *Health Educ Res*. 2006;21(4):567–97.
43. Fonner VA, Armstrong KS, Kennedy CE, O'Reilly KR, Sweat MD. School based sex education and HIV prevention in low- and middle-income countries: a systematic review and meta-analysis. *PloS One*. 2014;9(3):e89692. PMID: PMC3942389.
44. O'Reilly KR, Kennedy CE, Fonner VA, Sweat MD. Family planning counseling for women living with HIV: a systematic review of the evidence of effectiveness on contraceptive uptake and pregnancy incidence, 1990 to 2011. *BMC Pub Health*. 2013;13:935. PMID: PMC3852503.
45. Kennedy CE, Fonner VA, O'Reilly KR, Sweat MD. A systematic review of income generation interventions, including microfinance and vocational skills training, for HIV prevention. *AIDS Care*. 2014;26(6):659–73. PMID: PMC3943565
46. Zajac K, Kennedy C, Fonner V, Armstrong KS, O'Reilly KR, Sweat MD. A systematic review of the effects of behavioural counseling on sexual risk behaviours and HIV/STI prevalence in low- and middle-income countries. *AIDS Behav*. 2014:1–25.
47. Michielsens K, Chersich MF, Luchters S, De Koker P, Van Rossem R, Temmerman M. Effectiveness of HIV prevention for youth in sub-Saharan Africa: systematic review and meta-analysis of randomized and nonrandomized trials. *AIDS*. 2010;24(8):1193–202.
48. Albarracin J, Albarracin D, Durantini M. Effects of HIV-prevention interventions for samples with higher and lower percents of Latinos and Latin Americans: a meta-analysis of change in condom use and knowledge. *AIDS Behav*. 2008;12(4):521–43

49. Wei C, Herrick A, Raymond HF, Anglemyer A, Gerbase A, Noar SM. Social marketing interventions to increase HIV/STI testing uptake among men who have sex with men and male-to-female transgender women. *Cochrane Database Syst Rev*. 2011(9):CD009337.
50. Meader N, Li R, Des Jarlais DC, Pilling S. Psychosocial interventions for reducing injection and sexual risk behaviour for preventing HIV in drug users. *Cochrane Database Syst Rev*. 2010(1):CD007192.
51. Shahmanesh M, Patel V, Mabey D, Cowan F. Effectiveness of interventions for the prevention of HIV and other sexually transmitted infections in female sex workers in resource poor setting: a systematic review. *Trop Med Int Health*. 2008;13(5):659–79.
52. Wariki WM, Ota E, Mori R, Koyanagi A, Hori N, Shibuya K. Behavioural interventions to reduce the transmission of HIV infection among sex workers and their clients in low- and middle-income countries. *Cochrane Database Syst Rev*. 2012;2:CD005272.
53. Huang Z, Wang M, Fu L, Fang Y, Hao J, Tao F *et al*. Intervention to increase condom use and HIV testing among men who have sex with men in China: a meta-analysis. *AIDS Res Hum Retroviruses*. 2013;29(3):441–8.
54. Lu H, Liu Y, Dahiya K, Qian HZ, Fan W, Zhang L. Effectiveness of HIV risk reduction interventions among men who have sex with men in China: a systematic review and meta-analysis. *PLoS One*. 2013;8(8):e72747.
55. Zheng L, Zheng Y. (2012). Efficacy of human immunodeficiency virus prevention interventions among men who have sex with men in China: a meta-analysis. *Sex Transm Dis*. 2012;39(11):886–93.
56. Tan JY, Huedo-Medina TB, Warren MR, Carey MP, Johnson BT. A meta-analysis of the efficacy of HIV/AIDS prevention interventions in Asia, 1995–2009. *Social Sci Med*. 2012;75(4):676–87.
57. Huedo-Medina TB, Boynton MH, Warren MR, LaCroix JM, Carey MP, Johnson BT. Efficacy of HIV prevention interventions in Latin American and Caribbean nations, 1995–2008: a meta-analysis. *AIDS Behav*. 2010;14(6):1237–51.
58. Lan CW, Scott-Sheldon LA, Carey KB, Johnson BT, Carey MP. Alcohol and sexual risk reduction interventions among people living in Russia: a systematic review and meta-analysis. *AIDS Behav*. 2014;18(10):1835–46.
59. Cornish F, Priego-Hernandez J, Campbell C, Mburu G, McLean S. The impact of community mobilisation on HIV prevention in middle and low income countries: a systematic review and critique. *AIDS Behav*. 2014;18(11):2110–34.
60. Kennedy C, Medley A, Sweat M, O'Reilly K. Behavioural interventions for HIV positive prevention in developing countries: a systematic review and meta-analysis. *Bull World Health Organ*. 2010 Aug 1; 88(8): 615–623.
61. Sweat MD, Denison J, Kennedy C, Anhang R, Sweat M. Effects of condom social marketing on condom use in developing countries: a systematic review and meta-analysis, 1990–2010. *Bull World Health Organization*. 2012;90(8):613–22A. PMID: PMC3417793.
62. Björkman Nyqvist M, Corno L, de Walque D, Svensson J. Using Lotteries to Incentivize Safer Sexual Behaviour. Evidence from a Randomized Controlled Trial on HIV Prevention. *World Bank Policy Research Working Paper 7215*. March 2015 (<https://openknowledge.worldbank.org/bitstream/handle/10986/21654/WPS7215.pdf?sequence=1> accessed on 13 July 2015).
63. De Walque D, Dow W, Nathan R, Abdul R, Abilahi F, Gong E *et al*. Incentivising safe sex: a randomised trial of conditional cash transfers for HIV and sexually transmitted infection prevention in rural Tanzania. *BMJ Open* 2012; 2:e000747 doi:10.1136/bmjopen-2011-000747.

64. Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations. Geneva: World Health Organization; 2014.
65. Tool to set and monitor targets for HIV prevention, diagnosis, treatment and care for key populations. Geneva: World Health Organization; 2015.
66. Prevention and treatment of HIV and other sexually transmitted infections for sex workers in low- and middle-income countries: recommendations for a public health approach. Geneva: World Health Organization; 2012.
67. Implementing comprehensive HIV/STI programmes with sex workers: practical approaches from collaborative interventions. Geneva: World Health Organization; 2013.
68. Guidelines: prevention and treatment of HIV and other sexually transmitted infections among men who have sex with men and transgender people: recommendations for a public health approach. Geneva: World Health Organization; 2011.
69. WHO, UNODC, UNAIDS technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users—2012 revision. Geneva: World Health Organization; 2012.
70. Marrazzo J, Ramjee G, Richardson B, Gomez K. Tenofovir-based preexposure prophylaxis for HIV infection among African women. *New Eng J Med*. 2015;372:509–18. doi: 10.1056/NEJMoa1402269.
71. Grant RM, Anderson PL, McMahan V, Liu A, Amico KR, Mehrotra M *et al*. Results of the iPrEx open-label extension (iPrEx OLE) in men and transgender women who have sex with men: PrEP uptake, sexual practices, and HIV incidence. Paper presented at: 20th International AIDS Conference; 2014 July 20-25; Melbourne, Australia.
72. Baird S, Chirwa E, McIntosh C, Ozler B. The short-term impacts of a schooling conditional cash transfer programme on the sexual behaviour of young women. *Health Econ*. 2010;19 Suppl:55–68. doi:10.1002/hec.1569
73. Galukande M, Duffy K, Bitega JP, Rackara S, Bbaale DS, Nakaggwa F *et al*. Adverse events profile of prepep a non-surgical device for adult male circumcision in a Ugandan urban setting. *PLoS One*. 2014;9(1):e86631. doi:10.1371/journal.pone.0086631.
74. Cluver L, Boyes M, Orkin M, Pantelic M, Molwena T, Sherr L. Child-focused state cash transfer and adolescent risk of HIV infection in South Africa: a propensity-score-matched case-control study. *Lancet Glob Health*. 2013;1(6):e362–e370. doi:10.1016/S2214-109X(13)70115-3.
75. Pettifor A, MacPhail C, Nuyen N, Rosenberg M. Can money prevent the spread of HIV? A review of cash payments for HIV prevention. *AIDS Behav*. 2012;16(7):1729–38.
76. South African Government News Agency. Mining towns get R18bn facelift. 1 July 2015. (<http://sanews.gov.za/south-africa/mining-towns-get-r18bn-facelift> accessed on 14 July 2015).
77. Gebrekristos H, Resch S, Zuma K, Lurie M. Estimating the impact of establishing family housing on the annual risk of HIV infection in South African mining communities. *Sex Transm Dis*. 2005 Jun;32(6):333–40.
78. Comprehensive condom programming: a strategic response to HIV and AIDS. In: UNFPA/ HIV & AIDS [website]. New York (NY): United Nations Population Fund; 2015 (<http://web.lb.unfpa.org/hiv/programming.htm>, accessed 9 July 2015).
79. UNFPA contraceptives price indicator. Year 2014. New York (NY): United Nations Population Fund; 2014 (<http://www.unfpa.org/sites/default/files/resource-pdf/UNFPA%20Contraceptive%20Price%20Indicators%202014.pdf>, accessed 9 July 2015).

80. Condoms. A regional situation analysis. Presentation. Johannesburg: United Nations Population Fund, Eastern and Southern Africa Regional Office; 2013.
81. Sandøy IF, Blystad A, Shayo EH, Makundi E, Michelo C, Zulu J *et al.* Condom availability in high risk places and condom use: a study at district level in Kenya, Tanzania and Zambia. *BMC Pub Health.* 2012;;12:1030.
82. Data from Demographic and Health Surveys Statcompiler Database (statcompiler.com, accessed January 2015).
83. Weir S, Edwards J, Walker D, Kibao Z, Masako P. PLACE-Lite to identify gaps in prevention coverage in Iringa, Tanzania. Conference poster presentation. AIDS 2012. (<http://www.slideshare.net/measureevaluation/ias-posteriringa2012?related=2> accessed on 14 July 2015)
84. Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations. Geneva: World Health Organization; 2014.
85. Bekker LG, Johnson L, Cowan F, Overs C, Besada D, Hillier S *et al.* Combination HIV prevention for female sex workers: what is the evidence? *Lancet.* 2015;385(9962):72–87.
86. Global AIDS progress reporting 2013. Geneva: Joint United Nations Programme on HIV/AIDS; 2014.
87. Green K, Girault P, Wambugu S, Adams B. Reaching men who have sex with men in Ghana through social media: a pilot intervention. *Digit Cult Educ.* 2014;6(3):209–15.
88. State of the world's children. New York (NY): United Nations Children's Fund; 2012.
89. Degenhardt L, Mathers BM, Wirtz AL, Wolfe D, Kamarulzaman A, Carrieri MP *et al.* What has been achieved in HIV prevention, treatment and care for people who inject drugs, 2010–2012? A review of the six highest burden countries. *Int J Drug Policy.* 2014;25(1):53–60. doi:10.1016/j.drugpo.2013.08.004.
90. World drug report 2014. Vienna: United Nations Office on Drugs and Crime; 2014.
91. Wheeler T, Kiran U, Dallabetta G, Jayaram M. Learning about scale, measurement and community mobilisation: reflections on the implementation of the Avahan HIV/AIDS initiative in India. *J Epidemiol Community Health.* 2012;66:ii16–ii25. doi:10.1136/jech-2012-201081.





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