

encourage individuals to disclose and to reconsider a negative decision. Individuals should be told that their sexual partners need to know the results and that they have an obligation to inform their partners if they are HIV positive. Most women and men who disclose to their partners experience positive results.<sup>8</sup> Nonetheless, counsellors should be prepared to address the power dynamics of sexual partnerships and to discuss the possibilities of discrimination, violence, or other negative consequences in a realistic and supportive manner. Similarly, they should be trained to be non-judgmental about stigmatisable behaviours, such as injecting drug use and premarital or extramarital sex.

Partners could be encouraged to be counselled and tested together, if feasible and acceptable to both. Although there has been relatively little experience in counselling with couples, research shows that where it has been done, the outcome is favourable.<sup>9</sup> Joint counselling and testing would aim to ensure that information and decisions are shared and that mutual disclosure, irrespective of test results, occurs in a safe environment with a skilled facilitator and appropriate follow-up information and care.<sup>8</sup> This strategy could also help to establish the expectation that men go for testing where they do not now, especially in settings that provide family planning or antenatal care and delivery, where women can be expected to undergo (and feel targeted for) testing alone. Counselling of couples and testing could also be advocated for all people who are forming new sexual partnerships, including adolescents and men who have sex with men, and as a routine component of marriage planning or premarital counselling. Over time, such practices could

help encourage a new norm that testing and disclosure are expected and accepted.

Health activists and advocates of human rights must also work together for a greatly expanded commitment to gender equality and human rights. One of several investments needed is universal provision of comprehensive rights-based education about sexuality for young people so that new generations can lead informed, safe, and satisfying sexual lives based on respect for their mutual rights and responsibilities.

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## Ten myths and one truth about generalised HIV epidemics

Despite substantial progress against AIDS worldwide, we are still losing ground. The number of new infections continues to dwarf the numbers who start antiretroviral therapy in developing countries.<sup>1,2</sup> Most infections occur in widespread or generalised epidemics in heterosexuals in just a few countries in southern and eastern Africa. Although HIV incidence has fallen in Uganda, Kenya, and Zimbabwe, the generalised epidemic rages on. Something is not working. Ten misconceptions impede prevention.

*HIV spreads like wildfire*—Typically it does not. HIV is very infectious in the first weeks when virus levels are high,<sup>3</sup> but not in the subsequent many-year quiescent phase. Only about 8% of people whose primary heterosexual partners have the virus become infected each year.<sup>4</sup> Thus Kenya has more couples in which only one person is infected than couples in which both are (figure).<sup>5</sup> This low infectiousness in heterosexual relationships partly explains why HIV has spared most of the world's populations. However, the exceptional

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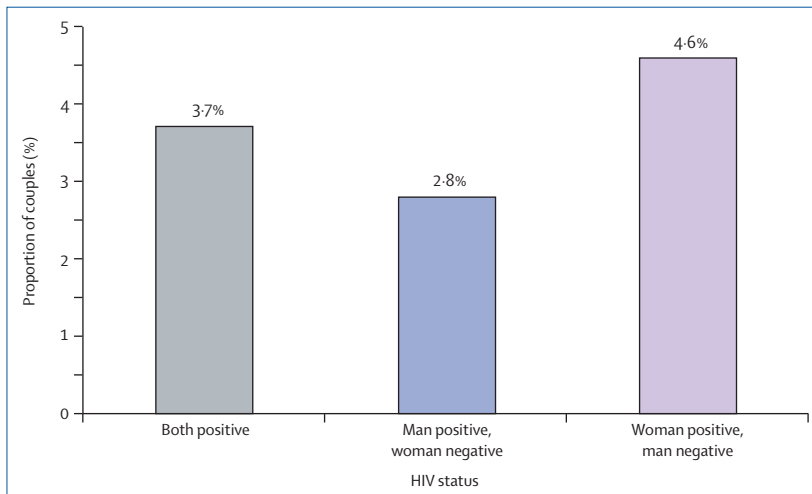


Figure: HIV concordance in couples, Kenya, 2003<sup>5</sup>

generalised epidemics in Africa seem largely driven by concurrent partnerships, in which some people have more than one regular partner. This pattern allows rapid dissemination when a new infection is introduced<sup>6</sup> and probably involves more frequent risky sex than in sporadic or exclusive relationships.

*Sex work is the problem*—Formal sex work is uncommon in these generalised epidemics. In Lesotho, fewer than 2% of men reported paying for sex in the previous year, although 29% reported multiple partners.<sup>7</sup> Nuanced economic support is an important enabler of regular concurrent partnerships and transactional sex, but the targeting of sex work in prevention campaigns has limited usefulness.

*Men are the problem*—The behaviour of men, including cross-generational and coercive sex, contributes substantially to the establishment of generalised epidemics. But a heterosexual epidemic requires some women to have multiple partners.<sup>3</sup> The importance of women in generalised epidemics is evidenced by the high proportion (sometimes the majority) of discordant couples in which the woman, not the man, is HIV positive (figure).<sup>5</sup>

*Adolescents are the problem*—Generalised epidemics span all reproductive ages. Although adolescent women are affected through sex with older men, HIV incidence increases in women in their 20s and later in life.<sup>8</sup> Men are infected at even older ages. Thus interventions in young people, including abstinence, although important, have limited usefulness.

*Poverty and discrimination are the problem*—These factors can surely engender risky sex. But HIV is

paradoxically more common in wealthier people than in poorer people, perhaps because wealth and mobility support concurrent sexual partnerships.<sup>9</sup> Moreover, HIV has declined without major improvements in poverty and discrimination, notably in Zimbabwe (notwithstanding substantial economic and social distress).

*Condoms are the answer*—Condom use, especially by sex workers, is crucial to the containment of concentrated epidemics, and condoms help to protect some individuals. But condoms alone have limited impact in generalised epidemics. Many people dislike using them (especially in regular relationships), protection is imperfect, use is often irregular, and condoms seem to foster disinhibition, in which people engage in risky sex either with condoms or with the intention of using condoms.<sup>8</sup>

*HIV testing is the answer*—That learning one's HIV status (hopefully with counselling) should lead to behavioural change and reduced risk seems intuitive. However, real-world evidence of such change is discouraging, especially for the large majority who test negative.<sup>3</sup> Moreover any changes must be sustained for years. And very newly infected people, who are highly infectious, do not yet test HIV-positive.

*Treatment is the answer*—Theoretically, treatment and counselling might aid prevention by lowering viral levels (and infectiousness) in those treated, reducing denial about HIV, and promoting behavioural change. However, no clear effect has emerged. Indeed these salutary effects might be outweighed by negative effects, such as resumption of sexual activity once those on antiretrovirals feel well, and disinhibition when people realise that HIV might no longer be a death sentence.

*New technology is the answer*—Many resources are devoted to vaccines, microbicides, and prophylactic antiretrovirals. Unfortunately any success appears to be far off. Moreover, such innovations might be mainly targeted only at very high-risk populations, rely on behavioural compliance, and engender disinhibition.<sup>10</sup> Similarly, treatment of sexually transmitted infections to prevent HIV has been disappointing.<sup>11</sup> Even male circumcision, an already available, unmistakably effective, and compelling priority will take years to have additional substantial effect.

*Sexual behaviour will not change*—Actually, facing the prospect of deadly illness, many people will change. Homosexual men in the USA radically changed behaviour

in the 1980s. And the reductions in HIV incidence in Kenya and eastern Zimbabwe were accompanied by large drops in multiple partners,<sup>8,12</sup> probably largely as a spontaneous reaction to fear.

Truthfully, our priority must be on the key driver of generalised epidemics—concurrent partnerships. Although many people sense that multiple partners are risky, they do not realise the particular risk of concurrent partnerships. Indeed, technical appreciation of their role is recent.<sup>6</sup> But partner limitation has also been neglected because of the culture wars between advocates of condoms and advocates of abstinence, because it smacks of moralising, because mass behavioural change is alien to most medical professionals, and because of the competing priorities of HIV programmes.

Fortunately we can enhance partner-limitation behaviour, akin to the behaviour change that many people have adopted spontaneously. State-of-the-art behaviour-change techniques, including explicit messages, that are sensitive to local cultures, can raise perception of personalised risk. Even modest reductions in concurrent partnerships could substantially dampen the epidemic dynamic. Other prevention approaches also have merit, but they can be much more effective in conjunction with partner-limitation. Now, more than 20 years into HIV prevention, we have to get it right.

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## Drop of HIV estimate for India to less than half

The recent UNAIDS/WHO AIDS epidemic update revises downwards the global estimate of people living with HIV/AIDS to 33·2 million (range 30·6–36·1 million).<sup>1</sup> This is a reduction of 16% compared with the estimate in 2006 (39·5 million, 34·7–47·1 million). The biggest reason for this decrease is the major revision for India, to 2·5 million people (2–3·1 million) or about 0·4% of adults. That estimate is less than half the earlier one of 5·7 million people (range 3·4–9·4 million).<sup>2</sup> What is the basis for this drop and what are the implications for further planning of HIV/AIDS control in India?

The new HIV estimate for India is based on population data from the third National Family Health Survey<sup>3</sup> of more than 102 000 adults (82% of eligible people), and includes upward adjustments for under-represented groups at high risk of HIV.<sup>4</sup> The survey data provide the most reliable HIV estimate for India so far.<sup>1,4</sup> These data

corroborate the findings from our study last year in Guntur district in south India, in which we showed that the official method used so far to estimate the HIV burden in India led to a 2·5 times higher estimate than population data adjusted for under-represented groups at high risk of HIV.<sup>5,6</sup> The official method—direct extrapolation of sentinel surveillance data for HIV from large public-sector hospitals to the entire population—was not valid for three reasons. First, application of the high HIV rate in people visiting sexually transmitted infection clinics to the 6% of the adult population assumed to have a sexually transmitted infection annually led to a 70% overestimate of HIV burden compared with the population-based estimate. Second, referral of HIV-positive individuals from private hospitals to large public hospitals led to a 46% overestimate. Third, over-representation of lower socioeconomic strata in people using public hospitals

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