Comment

Biomedical HIV prevention—and social science

The euphoria about biomedical interventions to prevent HIV (panel) that ignited the 2006 International AIDS Conference is about to be rekindled. The 2007 International AIDS Society (IAS) Conference on HIV Pathogenesis, Treatment and Prevention, in Sydney, Australia, has an entire track devoted to biomedical prevention. This conference will be important after what has already been an interesting year for prevention scientists.

During the past 12 months, two trials of male circumcision were stopped early because interim results showed such positive outcomes that it was considered unethical to continue.1,2 On the other hand, two trials of a microbicide compound were stopped early because of a suggestion of harm in one.3 Delegates attending IAS 2007 are certain to hear more about diaphragms, female condoms, microbicides, suppressive treatment of concurrent viral sexually transmitted infections, and pre-exposure and postexposure prophylaxis with antiretroviral therapy (ART), each of which will have varying degrees of efficacy. These developments are undoubtedly exciting and welcome, because for several years primary prevention of HIV has taken a backseat while delivery of HIV treatment has been in front. Successful trials will bring more calls for high-tech solutions. International policy and funding agencies will offer extra money for trials of new interventions, and for implementation and scale-up of others.4 But there is a case for considering carefully what should happen next.

It is important to remember that efficacy is not the same as effectiveness. All trials of biomedical interventions to prevent HIV have biological markers or reduced HIV transmission as the primary endpoint. Their aim is to show efficacy (health improvement under ideal circumstances, in expert hands), rather than effectiveness (impact on health, under real-world conditions, for entire populations). But the demonstration of efficacy can be problematic. Unexpected events, such as participants not using products as instructed and participants in the control group adopting other protective strategies, have undermined recent trials.6

The effectiveness of biomedical prevention is something we still know little about. So far, no intervention has been rolled out such that the impact on health outcomes for entire populations can be estimated.

Panel: Biomedical prevention options for limiting sexual transmission of HIV

- Diaphragms (and potentially other intrauterine devices)
- Pre-exposure prophylaxis for HIV with antiretroviral drugs
- Postexposure prophylaxis for HIV with antiretroviral drugs
- Drug suppression of concurrent viral sexually transmitted infections
- Vaginal and rectal microbicides
- Vaccination against viral infections, such as hepatitis A and B, human papillomavirus, and herpes simplex virus type 1 and 2
- Female or male condoms
- Antiretroviral treatment of all HIV-positive individuals immediately after diagnosis
- Adult male circumcision
- Vaccination against HIV (unlikely in near future)

Even large trials collect only limited data on social or cultural acceptability and intervention uptake beyond the trial setting.1,2,6 In most contexts, we barely know what is needed for scale-up or what support there is, or what behavioural consequences might accompany interventions.3–10 Education campaigns that explain interventions are nearly non-existent. The communication of concepts such as “partly effective” or “protection derived from combining interventions with condoms” needs social scientists working with communities to help grasp the nature of risk and protection.3–10 Before scaling-up, we need high-quality social and behavioural research that prepares the ground, highlights potential pitfalls, and flags unanticipated consequences. We also need the courage to learn from experience.

The consequences of ART as a prevention intervention at the population level in men who have sex with men illustrate why social and behavioural science research needs to precede scale-up. Theoretically, widespread uptake of ART should reduce overall viral load in the HIV-infected population, thus limiting transmission with or without behavioural change. Yet international surveillance data show only isolated examples of the stabilisation of HIV incidence in men who have sex with men, when ART is widely available.11 One conclusion of a systematic review of research in men who have sex with men between 1996 and 2003 was that the likelihood of reporting unprotected sex was significantly higher in those who believed ART reduced HIV transmission or who were less concerned about HIV, in view of the availability of ART.12 The message is simple: we must take potential unintended consequences and disinhibition in the context of prevention interventions seriously.13–15

Biomedical prevention interventions offer large promise, but are not a panacea. Efficacious interventions need to be embraced, incorporated into our repertoire, and scaled up quickly.6 But we owe it to those who might benefit from these interventions to do everything possible to maximise their effectiveness at a population level.15 We should begin by answering questions about individual versus social and cultural acceptability, scale-up requirements, feasibility, and delivery, and set up behaviour-monitoring mechanisms to gauge impact, changes over time, and intended and unintended outcomes. These are all daily chores for social and behavioural scientists. How to build better working relations between trialists and social scientists, how to undertake the social research that is needed to support any scale-up while trials are ongoing, and how to release the financial and capacity resources to do all that are all questions IAS conference delegates might want to consider on their journeys home from Sydney.

*John Imrie, Jonathan Elford, Susan Kippax, Graham J Hart National Centre in HIV Social Research, University of New South Wales, Sydney, NSW, Australia (JI, SK); Institute of Health Sciences, City University, London, UK (JE); and Centre for Sexual Health and HIV Research, University College London, London, UK (GJH)
j.imrie@unsw.edu.au

We declare that we have no conflict of interest.