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Even an HIV vaccine may not mean the end of AIDS

Editor – Data recently released by UNAIDS show the scope of the human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS) pandemic, with a global total of 5.3 million new infections in 2000 (*1*). Every continent has been affected, though the developing countries are bearing the brunt. The most common mode of spread has been through heterosexual contact. Control and prevention of infection has generally been through information and education aimed at behavioural change: safer sex with the use of condoms has been promoted, injecting drug use discouraged, and needle exchange programmes introduced with varying success.

Some experts have suggested that the discovery of effective curative therapy and vaccine will be the "magic bullet" against HIV/AIDS, but I venture to dampen this optimism. Yes, an effective vaccine will be vital, so will effective, readily available and acceptable therapy. But availability is not enough, as experience has shown that other difficulties will stand in the way.

There have been vaccines against many communicable diseases for decades now, and the eradication of poliomyelitis from the western hemisphere is attributed to vaccination. But many other infections for which vaccines exist are still far from eradication. Of particular note are hepatitis B, tetanus and pertussis. In the case of hepatitis B, the vaccine is not generally available in many developing countries despite convincing evidence that it prevents infection and chronic forms of liver disease (e.g. cirrhosis and carcinoma). Other relatively new vaccines such as those against *Haemophilus influenzae* B and pneumococcal disease are still a rarity in the developing countries, where they are desperately needed.

The Expanded Programme on Immunization (EPI) has achieved remarkable progress in the prevention of childhood illness. But funding for EPI activities in many countries rests heavily with donor agencies. Malawi, one of the ten poorest countries, provides just 2% of its EPI budget. Will the goodwill that has sustained EPI activities continue and extend to HIV vaccines?

One feature unique to EPI vaccines is that they are given to children, not on the child's own volition but on that of the parents or guardian. If an eventual HIV vaccine is to be given to adults, different promotional skills will be required. Even the vaccines of childhood have been met with myths and misconceptions so that, in some cases, children fail to be immunized. A study in Zimbabwe published in 1999 (*2*) found that 55.6% of males and 64.6% of females felt they had no chance of being infected by HIV, yet the country seropositive level among adults aged 15 years and above is at least 15%, according to the National AIDS Control Programme.

The mode of delivery of an HIV vaccine would have to be considered carefully. If it were to be by injection, immunization against HIV could involve infection with hepatitis viruses in the process (*3*).

In case an effective therapy is discovered, who gets treated? For one thing, HIV testing is available in most industrialized countries (*4*) but not always in developing countries. There are areas of Malawi that are over 200 km away from the nearest testing centre, and the situation could be worse in other countries. Where antiretrovirals (ARVs) are available, at least in private practice, their use may be irresponsible (*5*). In a study in Zimbabwe the conclusion was that there was "therapeutic anarchy in the private sector in the way ARVs were being used" (*6*), thus creating a situation for the emergence of drug resistance and the consequent need to develop further generations of the drugs.

Perhaps it would be necessary to exercise surveillance of drug administration, in a way similar to the DOTS (directly observed therapy, short course) strategy that is being implemented for tuberculosis. But DOTS has not worked everywhere, and all the requirements for an effective DOTS programme — fully supervised therapy, laboratory diagnosis, reliable drug provision, effective monitoring and political commitment — are but a dream to most countries heavily affected by tuberculosis (and HIV/AIDS).

The issues I have raised, though depressing, are worth consideration, as it is not enough to manufacture vaccines or medications and think that patients will use them properly. That has not been the case with any other intervention in public health, because of the complexity of human behaviour. It is tempting to think that a cure will mean the end of HIV/AIDS, but we have cures for malaria, for example, and yet over 3 million deaths occur annually from the disease. ■

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