# Policy Brief

International AIDS Vaccine Initiative

## The Contribution of AIDS Vaccines to Poverty Reduction

### I. The relationship between AIDS and poverty

This brief is intended to inform global development strategies by describing the role of AIDS vaccines – and the importance of investing in AIDS vaccine research and development – in achieving sustainable reductions in poverty.

As is widely known, many of the poorest countries of the world are also among those worst affected by AIDS. The extent to which AIDS causes and deepens poverty is perhaps less well-recognized. This is particularly true for sub-Saharan Africa, where the very high disease burden due to AIDS, malaria and tuberculosis is one of five key structural reasons making it the region most vulnerable to a persistent poverty trap.[i]

AIDS deepens household poverty and has a negative effect on national economies where prevalence is high; poverty is also a factor that can be associated with higher vulnerability, higher rates of infection, and lower opportunities to obtain treatment.

IAVI is working to summarize evidence on the impact of the AIDS epidemic on attainment of the Millennium Development Goal targets relating to poverty, hunger and nutrition, primary education, child health, and control of TB – and the links between these targets and the development of an AIDS vaccine.

*AIDS deepens poverty*

- When adults in a family become infected, they fall ill and stop earning.
- Children, especially girls, are then often taken out of school to look after ill family members, which sharply constrains children's opportunities for higher income later in life.
- People spend savings, sell assets or take out loans to pay for medical treatment.
- In such circumstances, the poor are forced to reduce their expenditure on food, which further reduces their resistance to the opportunistic infections made possible by HIV/AIDS.
- Sickness and absenteeism impairs business and industrial productivity.
- There are substantial costs for training professional or skilled workers, including teachers and medical professionals to make up for those lost due to AIDS.

*Poverty aggravates AIDS*

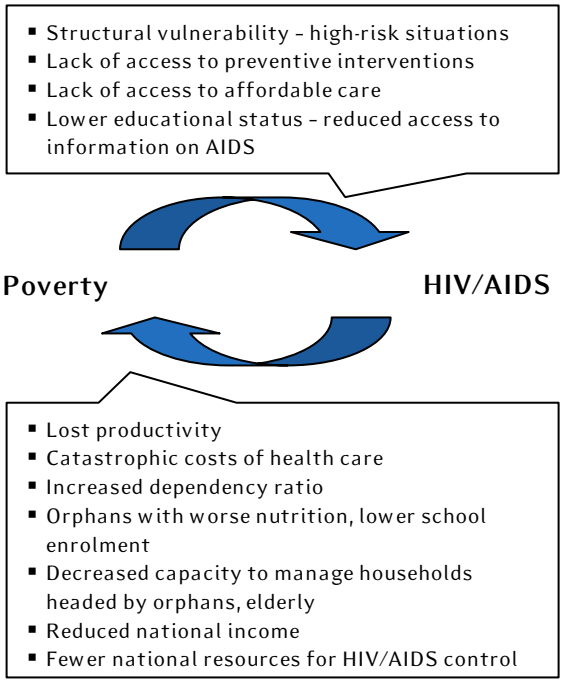
- Lack of access to education means that young people are less likely to learn to protect themselves from HIV.
- Poverty and lack of parental care create particular vulnerability for girls and young women for whom unsafe sex may become a means of survival.
- Those who are poor have less access to treatment for opportunistic infections associated with AIDS, and have relative difficulty entering programs for anti-retroviral care.

In summary, the AIDS epidemic has a major impact on poverty at both the macro-economic and household levels. According to one analysis, at the end of a 20-year period a typical sub-Saharan country with an HIV prevalence rate of 20% would have a 67% lower GDP than would be the case without AIDS.[ii] (see Fig.1)

### II. Existing responses to AIDS

Existing prevention and treatment methods can reduce HIV infection rates and illness/death and thus

Fig. 1




Source: UNAIDS. *AIDS, Poverty Reduction, and Debt Relief*. Geneva: UNAIDS, 2001.

mitigate the impoverishing effects of AIDS. Hence, a strong AIDS prevention and treatment program based on proven technologies will help to fight poverty – especially when prevention and treatment services are targeted to the poor and vulnerable.

However, existing prevention and treatment technologies have limitations that make them inherently difficult and sometimes costly to sustain. An effective AIDS vaccine, as well as other new prevention technologies such as a microbicide, would help address these limitations.

### *Cost*

UNAIDS estimates the cost of an effective global response to HIV/AIDS will grow to US$ 20 billion a year by 2007, of which US$ 10 billion will be needed for prevention services and US$ 7 billion for treatment, including antiretroviral (ARV) drugs for just over six million people.[iii,iv] (see Fig. 2) Of this US$ 20 billion, around US$3 billion a year would be met from household and government sources within developing countries, implying a continuing drain on the resources of those who are already poor, and the remaining US$ 17 billion would be provided by donors. This donor contribution compares with a total of around $8-9 billion currently spent by donors for all health services in the developing world.

At the same time, as treatment succeeds in keeping people alive, the number needing it will increase year on year as new people whose HIV infection progresses to a stage needing treatment. Around 4-5 million people will become newly eligible for treatment each year, including 3 million in the 34 priority countries targeted by the World Health Organization's "3 by 5" Initiative.[v] In summary, once treatment becomes widely available, its cost can be expected rapidly to rise beyond the US$ 7 billion estimated for 2007.

### *Sustainability*

Little compensating savings on prevention can be expected using existing methods; these rely on interventions which are human-resource intensive and which need to be maintained indefinitely; for instance, condoms must be used in every high-risk sex act. At a community or national level, successful prevention strategies entail sustained activity to educate all young people and to maintain high levels of awareness and to avoid complacency among those in sexually active age groups.

Treatment provision can facilitate HIV prevention by encouraging people to seek voluntary testing and counseling and fostering an environment of greater hope and openness. Treatment in itself may not lower rates of new infection, however. ARV drugs can reduce individual infectiousness, but they seem to have less impact on transmission rates overall.

### *Political support*

Current HIV prevention methods have achieved some noteworthy successes. It is important to recognize, however, that these have required high level political leadership and effective management as well as grass-roots implementation. An example is Uganda, where strong leadership and organization have mobilized much of the nation and where adult HIV prevalence has been brought from around 20% to single digits. But many of those infected with HIV or at greatest risk of infection live in countries where political commitment to fight AIDS or the capacity to manage prevention programs is weak. In 2000 an estimated 17.1 million people with HIV infection were living in such "fragile states" where intervention is most difficult.[vi]

Fig. 2

**Resource requirements for HIV/AIDS interventions, 2005 and 2007 (US$ billions)**

| Intervention | 2005 | 2007 |
|---|---|---|
| Prevention | 6 | 9.8 |
| Care and treatment | 3.8 | 6.7 |
| Orphans, vulnerable children | 1.1 | 2.2 |
| Admins, overheads | 0.7 | 1.1 |
| **Total** | **11.6** | **19.9** |

Source: UNAIDS Global Resource Tracking Consortium. *Financing the expanded response to AIDS* (Prepublication draft). Geneva: UNAIDS, 2004.

## III. How vaccines differ from existing approaches

An AIDS vaccine would offer an additional choice within the current spectrum of responses to the epidemic and could even alter the basic paradigm of HIV prevention in a more fundamental way. A vaccine can provide durable protection via a number of courses per person with occasional re-vaccination, or ideally via a "one time" intervention. This makes vaccination comparatively cheap and easy to deliver. Vaccination requires less robust health systems than treatment:

- Interruptions in vaccine provision are not catastrophic. The service can be resumed at a later date.
- Relatively low levels of staff training are needed to administer vaccines appropriately.
- Technological requirements may be simpler than for many treatment activities, involving refrigeration but not specialized laboratory services.

Vaccination programs for other diseases have proven to be relatively good at reaching the poor and women, so some of the income and gender equity problems that may affect AIDS treatment can be overcome with a vaccine. Also, because vaccine provision is not directly linked to sexual or other high-risk activities, it may mitigate some of the difficulties inherent in prevention for marginalized or vulnerable individuals who engage in behavior which is criminalized or socially stigmatized.

The first vaccines to be developed against AIDS may be only partially effective and will take time to deliver to at-risk communities. Hence they will need to be deployed in tandem with existing prevention methods, including condoms. However, because the relationship between individual susceptibility/ infectiousness and rate of spread of an epidemic is not linear, a combined approach may have a greater beneficial impact than an additive model would suggest.

There are compelling reasons why donors should see the value of investing in AIDS vaccine R&D, as well as research and testing of microbicides, even as treatment programs continue to expand. Without new preventive technologies to complement and go beyond existing HIV prevention methods, treatment can be expected to absorb an ever-increasing proportion of aid, competing with other important poverty reduction needs. Improved prevention would also help maintain effective, efficient provision of treatment to those who need it. Greater investment in vaccine and microbicide R&D is attractive in that it offers the prospect of earlier release from this scenario of continually escalating costs.

## IV. Conclusion

An AIDS vaccine would be an excellent poverty-fighting intervention to address the pandemic. Its benefits could include being relatively cheap, easy to administer, and gender and income-neutral.

IAVI supports expansion of existing AIDS prevention methods and universal access to treatment, including ARV drugs, on the basis of clinical need. If implemented, existing proposals to reduce poverty by increasing aid,[vii] tackling debt and reforming trade will provide enough resources for short-term expansion of existing approaches and for redoubled vaccine development efforts. In the medium and longer term, without enhanced HIV prevention including new methods such as vaccines and microbicides, treatment costs could escalate to a level that is hard to support even with increased resources.

IAVI welcomes and shares the aims of the growing worldwide movement to make 2005 a breakthrough year for poverty eradication. The MDG targets are valuable in assessing progress, but the goal should be not just for 2015, but for the 21st century. By bringing an end to the AIDS pandemic, a vaccine offers the surest route to long term development and prosperity for the world's poorest countries.

## Notes and references

[i] UN Millennium Project, *Investing in Development: a practical plan to achieve the Millennium Development Goals*. London: UNDP/Earthscan, 2005.
[ii] Bonnel, R., "HIV/AIDS and economic growth: a global perspective." The South African Journal of Economics 68(5): 820-55, 2000.
[iii] UNAIDS, *Funding for AIDS Factsheet*. Geneva: UNAIDS, 2004.
[iv] More recent unpublished estimates are slightly lower, at $18.8b in 2007 for an "aspirational" scenario. One of the reasons for the lower figure is that the number of people receiving ART in 2005 is lower than had previously been estimated as achievable. UNAIDS, unpublished paper.
[v] Over, M., "Impact of the HIV/AIDS Epidemic on Health Sectors." International Monetary Fund, *The Macroeconomics of AIDS*, ed M. Haaker. Washington: International Monetary Fund, 2004.
[vi] UK Department for International Development. *Why we need to work more effectively in fragile states*. London: DfID, 2005.
[vii] For example, the International Finance Facility.

*About IAVI:* IAVI (www.iavi.org) is a global not-for-profit organization whose mission is to ensure the development of safe, effective, accessible, preventive HIV vaccines for use throughout the world. IAVI's financial and in-kind supporters include the Bill & Melinda Gates, Rockefeller, Alfred P. Sloan and Starr foundations; the governments of Canada, Denmark, Ireland, the Netherlands, Norway, Sweden, the United Kingdom and the United States; multilateral organizations including the European Union and the World Bank; corporations such as BD (Becton, Dickinson & Co.), Continental Airlines and DHL; leading AIDS charities such as Crusaid, Deutsche AIDS Stiftung and the Until There's A Cure Foundation; and other private donors such as the Phoebe W. Haas Charitable Trust B.

**Policy Brief**
*IAVI's Policy Brief series outlines key public policy issues in the research, development and eventual distribution of HIV vaccines.*
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