

Hopes and ideas to eradicate HIV

In 1983, a group of scientists and doctors, headed by Luc Montagnier, discovered the underlying retroviral cause of a mysterious new syndrome, Acquired Immunodeficiency Syndrome AIDS. The retrovirus was named lymphadenopathy-associated virus, or LAV. In 1986, the name was dropped in favor of the new term: Human Immunodeficiency Virus (HIV). If, in 1980, scientists would have been asked to describe the “catastrophical virus” for humankind, one can think that the characteristics of this virus would have strongly resembled HIV. But, one could wonder if they could have imagined the dreadful medical, financial, economical, and most of all the humanitarian consequences of the virus.

My knowledge on AIDS is pretty limited and I am definitely not a specialist, but I have twenty-five years of hindsight that the scientists of the eighties did not have. I will use this hindsight the best that I can to reflect on a possible eradication of AIDS. Note that this is an extremely ambitious goal, at the boundary of utopia. To make this reflection meaningful, I will develop feasible and realistic ideas that can be applied in the near future. The notion of “feasible and realistic ideas” is obviously subjective and is based on my own opinion. This essay is divided in four parts. The first section will deal with a universal “add campaign” to raise awareness and improve education; the second section will deal with an annual and universal screening test; the third with a free and intensive distribution of condoms and microbicides. The last section will concentrate on two other ways to fight the virus: the development of a vaccine and the use of triple drug therapy.

In 2007, an estimated 33.2 million people worldwide lived with the disease, and it killed an estimated 2.1 million, including 330,000 children (WHO Epidemic update 2007). There were 2.7 million infected in 2007 alone (Steinbrook 2008). Some of these 2.7 million infections could have been avoided if every individual around the world had the adequate education.

The UNAIDS/WHO report “AIDS, epidemic up date” (Dec. 2005) stresses the consequences linked to this lack of education:

“In much of sub-Saharan Africa, knowledge about HIV transmission routes is still low. Generally, women are less well informed about HIV than are men; this is also true of rural areas compared with those living in cities and towns. This is the case even in the ten countries where more than one out of ten adults is infected. In 24 sub-Saharan countries (including Cameroon, Côte d’Ivoire, Kenya, Nigeria, Senegal and Uganda), two thirds or more of young women (aged 15–24 years) lacked comprehensive knowledge of HIV transmission (various surveys, 2000–2004). Data from 35 of the 48 countries in sub-Saharan Africa show that, on average, young men were 20% more likely to have correct knowledge of HIV than young women. Education levels make a huge difference, too (UNICEF, 2004). For example, young women in Rwanda with secondary or higher education were five times as likely to know the main HIV transmission routes than were young women who with no formal education (Ministère de la santé Rwanda, 2001)”.

Contradictory statements between politicians, religious leaders and scientists also cause confusion amongst populations with low education. The following two examples highlight contradictions that cause confusion. The first one occurred in South Africa in April 2006. Former deputy president Jacob Zuma was accused of raping an HIV-positive woman and was on trial in the Johannesburg High Court. He told the court that neither he nor the 31-year-old family friend he had sex with, had a condom, but he decided to have sex anyway. He went on to say that after serving on the country's Aids Council he knew the risk was "minimal" that he would be infected. “And I also took a shower” Zuma added. After these ridiculous comments, the National Aids helpline was flooded by calls from confused South African women asking if whether or not they should take a shower after being raped to reduce their risk of HIV infection.

The second example occurred in 1999 in Kenya. As the government belatedly declared that the AIDS epidemic was reaching crisis levels, Catholic Bishop John Njue propagated false scientific information by claiming that condoms are to blame for the spread of AIDS. Since then, Mr. Njue has been named Archbishop of Nairobi, and Benedict XVI announced that he would make him a Cardinal.

It is extremely important that Science wins the information war because too many lives are at stake and simply because it is the truth. To win this war, serious investments are needed for

advertisement campaigns and special courses in schools. Adding school courses is the best and cheapest method but it will work only in developed, secular nations: In many poor countries, children quit school too early (especially girls, who are the most at risk), and there is no way you'll have classes on safe sex in countries like Saudi Arabia or Iran (it is even an issue today in the Bible Belt). The school courses are crucial because teenagers have to learn the true scientific facts before getting brainwashed by one of the many myths about AIDS. The advertisement campaigns will complement the courses in schools by informing adults. Obviously, these campaigns will have to be specific to each society: you can not have TV ads in countries where less than 10% of the population has a television set. The ads should focus on giving proper education to young girls (who are more responsible than men) but also to men because they have the power over women.

Giving a proper education to everyone and especially to women is only the first step in the war against AIDS. In fact, the war starts with a fight against ignorance. In the first part, I discussed the consequences of ignorant people in the sense of being uneducated and uninformed of the medical and scientific facts of HIV. In this second part, I will concentrate on people unaware of their seropositivity. This is a big issue. The Center for Disease Control estimates that approximately 25% of the US HIV-positive population is unaware of its seropositivity. This is in a developed country with a decent medical system for most citizens (except for 40 millions of them...). Who knows how high the percentage is in Africa.

This ignorance causes many problems. First of all, it drastically increases the probability of transmission. Second of all, it undermines all the "classic" public health plans to fight epidemics. These plans are based on the assumption that infected individuals will visit their physician after the appearance of the first symptoms and that they will modify their behavior in order to avoid contaminating other people. In the case of AIDS, progression from HIV infection to AIDS occurs at a median of between nine to ten years. Thus, there are no symptoms for nine to ten years. This causes two major problems. First of all, HIV-positive patients can infect other people without knowing it. Second of all, individuals who do not feel sick simply do not get tested. Therefore, Public Health Organizations do not have accurate data for the geographical and sociological dispersion of the epidemic. No accurate data means difficulty to build efficient programs to fight AIDS, and it makes it impossible to evaluate the efficiency of the programs in place. To settle

these problems, many prevention campaigns emphasize on frequent and voluntary testing. Unfortunately, these add campaigns are expensive and the results are not good enough. After these extensive campaigns, a lot more people know how HIV spreads and how to protect themselves, but they still does not feel affected by the disease because there is that wrong impression that you cannot get infected if you don't have any links with individuals involved in risky behavior. Also questions of respectability, honor or even personal security hold back many people. AIDS is a sexually transmissible disease (STD). Therefore, getting the test is very likely to arouse the partner's suspicion. If the screening test is positive, it can put marriage on the line while for many women (specifically in Islamic states and territories) admitting to adultery results at best in a repudiation by her spouse and her family and at worse in the death penalty. To counter this ignorance and all the consequences that come with it, I think that a universal and annual screening test should be implemented. Note that the results of these screening tests would remain private. In dictatorships, totalitarian an authoritarian states, that universal and annual screening test could be implemented very easily by making it mandatory. In particular, that would somewhat solve the problem of security for women, because "taking the test" would be free of any negative connotation. Implementing this mandatory test would prove difficult in democracies for legal reasons: individual liberties prevent mandatory testing, especially when a blood test is involved. To get around this problem, I think that a series of "carrot and stick" measures could do the job. I thought about three that seem implementable: The publication on Internet of an exhaustive list of people having done the test. This would create by default the list of the untested. Therefore, an individual could ask his sex partner why he/she did not get tested and refuse sexual relations as a precaution. Issue a card for tested people (like a drivers license), that offer substantial rebates on many government or private services. Obligation to pass a screening test when entering the country. For poor countries a financial incentive could help. It is important to note that the screening test available today identify HIV antibodies produced by the body to fight the virus. It takes 3–4 weeks to start the production of antibodies. Hence wrong diagnoses are possible.

Universal screening tests would give precise data on the number of infected. But that is just the start. The goal is to stop the spread of the virus. This may be done by an intensive and free distribution of condoms and microbicides. As of today, condoms are the only total protection

against HIV (providing it is well used and does not brake during penetration) . It is the best weapon against the pandemic. On top of that, it also protects against other STDs and unwanted births. Despite all these advantages and despite the great work done by certain government and NGOs, condoms are not used enough. The reasons for that “casual” use are generally the same in every country, but are more pronounced in Sub-Saharan Africa. To start with, changing cultural habits is a long and tedious process. It is even worse when it involves the number one taboo subject: sexuality. On top of that, we have to fight the disinformation and the myths around AIDS (see part 1). Another big problem is that condom use depends on the man’s will. Most of the time, men have the very bad habit to consider condoms as a plus but not a must: very few men would deprive themselves of sex because they have no condom. Unfortunately, some man also force either physically or morally woman to have unprotected sex. Moreover, men are more likely to have many sexual partners therefore he is more likely to be a vector for the disease.

To improve the use of condoms, we have to invest drastically in the free distribution of condoms. The NGOs and other Health Organizations responsible for the education and prevention campaigns can also distribute condoms. Note that in some African countries (Uganda, Togo, Benin) condom distribution is well under way. In these cases, all that is needed is more money to expand the programs already in place.

To prevent the spread of HIV, women should have their own form of protection. Vaginal Microbicides could give them some kind of control. Microbicides are a cream applied in the vagina. These creams are in the development stages hence important investments in research are needed. The last breakthroughs are promising: on November 11 2008, the Mintaka foundation published a press release in which it announced the discovery of a natural microbicide (5P12_RANTES) by Dr. Olivier Hartley’s team. Since it is a natural microbicide, the manufacturing cost will be very low, therefore affordable for poor patients. The clinical trials need to be done. If this microbicide is efficient, we could use the condom distribution network. There are many advantages to microbicides. First, women could simply apply it every morning (assuming it lasts long enough). Hence no need to carry a tube around in case of an unexpected sexual relationship and they are still protected even if their partner (or rapist) does not use a condom. Secondly, manufacturers can choose to incorporate birth control substances in the microbicide. Thus women will have the power to choose if they want to get pregnant and religious congregations will not be able to oppose microbicides like they oppose condoms.

Since HIV is a virus the most effective way to eradicate the disease is by vaccination. All the other efforts to prevent the spread of HIV can be considered as ways to “limit damages” until we find a vaccine. The problems are the possible cost of such a vaccine and the delays. I think that the cost will not be a real issue because all the prevention budgets could be shifted to fund a vaccination campaign. Also, universal vaccination could be presented to the public and the politicians around the world as an investment: the economic price of AIDS is so high, that getting rid of it will be profitable in the long term. It might sound cruel, but sadly the “profit argument” is the one that works the best (think about how renewable energy is presented...). Unfortunately, no matter how much money is available, we still have to wait for scientists to find a vaccine. One of the problems is that HIV proliferates and mutates extremely fast. Optimistic scientists hope that a vaccine could be ready in ten years. Others say 15 to 20 years. That is long when an estimated 2.7 million people were infected last year. The real issue is to make sure that the vaccine will be fully effective, because vaccinated individuals risk ignoring all the prevention they had learned.

In the developed countries, HIV-positive patients follow triple drug therapy. If followed properly, they help to postpone the emergence of AIDS and decrease the probability of transmission under one percentage point (nonetheless, it is not zero). In Africa, the extra years of survival are crucial. Often, these couple years would be enough for the children of HIV-positive patients to become young adults and therefore be able to look after themselves when their parents die. Unfortunately, triple drug therapy is extremely expensive and has major side effects. Whether patients do not adhere to their drug regimen because they can not afford them or because they can not cope with the side effects, the consequence is the same: the development of a resistant strain. If the resistant strain spreads, the newly infected person will not be able to be treated. Whether or not this means that triple drug therapies are have a negative effect on the spread of HIV is another topic.

To conclude, eradication of HIV/AIDS is, as of now, utopian. Nevertheless, if Humanity seriously wants to fight this virus, we have to start by creating a global, annual and universal screening system. To know where we stand, and if the work being done is benefiting our society. Having done that, we have to invest much more in prevention campaigns and distribution of

condoms and microbicides. At the same time we have to increase funding for research to find a vaccine and more affordable drugs. It is going to be long and tedious, and until a vaccine is found, we will be, at best, able to contain the pandemic. It is only a start, but if infected individuals can witness small “victories” against the virus, it will give them a little bit of hope; and hope keeps man alive.