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Controversial Review:

Dilemma of concepts and strategies for the prevention of spread of HIV in relation to human behavior, law and human rights

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Abstract: The new prevalence data regarding the estimated global number of human immunodeficiency virus positive (HIV[+]) cases, i.e., including people who are either aware or unaware of their HIV infection in 2010, lead many to wonder why the increase in incidence has reached today's unprecedented level and escalated within such a short time. This, in spite of prevention campaigns in countries affected by HIV/acquired immune deficiency syndrome (AIDS) with their urgent messages aimed at preventing HIV transmission by promoting changes in individual's behavior. This article analyzes the background of the prevention strategies, in particular their political, social and legal concepts in terms of human rights, and reveals traits of human behavior not considered thus far. A radical reappraisal is necessary, at social and legislative levels, as well as options additional to current concepts. When ethical issues come up, they become blamed for outmoded moralistic positions. However, ignoring the reality has led to dire consequences from prioritizing individual human rights over society's collective need to prevent the spread of HIV.

Key words: HIV, Prevention, Human rights, Fundamental rights, Jurisdiction, Decriminalization
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1 Introduction

We are prompted to write regarding the current prevention strategies in the context of the unprecedented ongoing human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) pandemic (van de Laar and Likatavicius, 2009). Figs. 1 and 2 (UNAIDS, 2010) show the selected data on the dynamics of the spread of HIV. In view of the efforts undertaken thus far, and the increasing number of people infected with HIV, the questions are: what are the prospects for halting its further spread, and can it be stopped by the measures applied so far or by measures which cannot currently be countenanced in a liberal and open society? The urgent issue to be realistically addressed is: what is the impelling force driving the ongoing spread of HIV in different parts of the globe? The spread of HIV is not due to a community acquired epidemic like influenza or tuberculosis, but follows the mechanism of individual and intensive interpersonal sexual contact and needle sharing among injecting drug users (leaving aside the special cases of mother-to-child transmission, blood transfusion, and rare situations such as blood-to-blood contacts, e.g., due to biting). At present, AIDS is not curable and still poses a deadly threat to those infected. Ethical and human rights (HR) issues are

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involved. In general, they impinge on the concept of the "interests of society" which is not generally seen as an object of legal protection. Essentially, here they mean the following issues:

1. Compliance with HR Article 3, "everyone has the right to life, liberty and security of person" (i.e., compliance with laws that are not specific to HIV but which are generally valid, e.g., "don't harm other people", "don't kill other people"), and Article 29, duties to the community.

2. Bi-directional commitment of the members of the community.

3. Solidarity in both directions.

4. Self-determination, but within limits, i.e., respecting the need to maintain order in the community.

5. Social interdependence which requires mutual esteem of the community members and liability based on ethical aspects. The individual has to admit his/her responsibility to society.

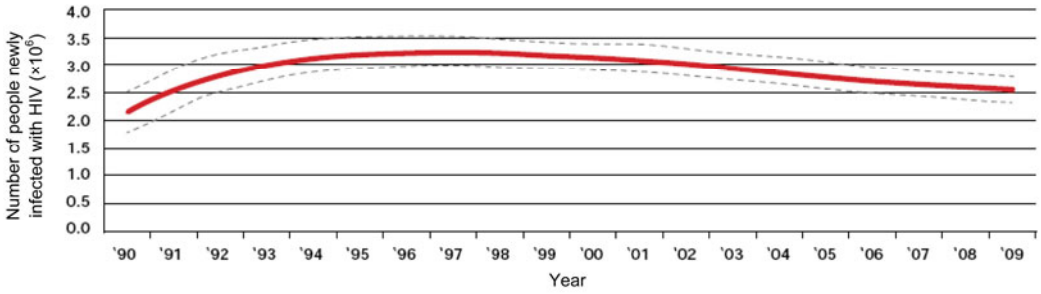

Fig. 1 Dynamics of the spread of HIV, new HIV infections are declining (UNAIDS, 2010)

		Adults and children living with HIV	Adults and children newly infected with HIV	% Adult prevalence (15–49 years)	AIDS-related deaths among adults and children
CARIBBEAN	2009	240 000 [220 000–270 000]	17 000 [13 000–21 000]	1.0 [0.9–1.1]	12 000 [8500–15 000]
	2001	240 000 [210 000–270 000]	20 000 [17 000–23 000]	1.1 [1.0–1.2]	19 000 [16 000–23 000]
EASTERN EUROPE AND CENTRAL ASIA	2009	1.4 million [1.3–1.6 million]	130 000 [110 000–160 000]	0.8 [0.7–0.9]	76 000 [60 000–95 000]
	2001	760 000 [670 000–890 000]	240 000 [210 000–300 000]	0.4 [0.4–0.5]	18 000 [14 000–23 000]
WESTERN AND CENTRAL EUROPE	2009	820 000 [720 000–910 000]	31 000 [23 000–40 000]	0.2 [0.2–0.2]	8500 [6800–19 000]
	2001	630 000 [570 000–700 000]	31 000 [27 000–35 000]	0.2 [0.2–0.2]	7300 [5700–11 000]
NORTH AMERICA	2009	1.5 million [1.2–2.0 million]	70 000 [44 000–130 000]	0.5 [0.4–0.7]	26 000 [22 000–44 000]
	2001	1.2 million [960 000–1.4 million]	66 000 [54 000–81 000]	0.4 [0.4–0.5]	30 000 [26 000–35 000]
TOTAL	2009	33.3 million [31.4–35.3 million]	2.6 million [2.3–2.8 million]	0.8 [0.7–0.8]	1.8 million [1.6–2.1 million]
	2001	28.6 million [27.1–30.3 million]	3.1 million [2.9–3.4 million]	0.8 [0.7–0.8]	1.8 million [1.6–2.0 million]

Fig. 2 Dynamics of the ongoing spread of HIV in selected global areas in 2009 and 2001 (UNAIDS, 2010)

Regional statistics on adults and children newly infected and living with HIV and AIDS-related deaths

6. Increasing socioeconomic burden. Due to the interwoven complexities, e.g., living conditions of people living with HIV (PLWH) in general and personal circumstances in particular, only selected situations can be addressed here.

HIV/AIDS has become an international emergency. It has created exceptional challenges with serious impacts on societies in general, communities, social networks, and in particular regarding sexual behavior in partnerships. Established libertarian frameworks need to change in relation to personal autonomy. Prompted by its new host, HIV has created a disastrous situation which necessitates changing the rules and the scales with which our societies and its members are used to living, and requires personal responsibility of a new standard.

2 Basics of the HIV infection and how its features promote its spread

Apart from drug-using practices which involve vehicles, e.g., needles and syringes, the transmission of HIV is strictly a person-to-person bound infection, a sexually transmitted infection (STI). The low impact of efforts to curb its ongoing spread results partly from the interaction between certain traits of the HIV itself and its new host, the species "Homo sapiens": After HIV infection with or without an acute retroviral syndrome (ARS), there is a symptom-free phase of variable length, but an infectious stage follows which, prior to the onset of AIDS itself, usually lasts for several years (Pinkerton, 2007; Schneider *et al*., 2008). Due to this time lag between HIV transmission and its adverse affects [preliminary stages 1 and 2 ahead of Centers for Disease Control and Prevention (CDC), stage 3 (AIDS)], there is no immediate awareness of the risk and harm caused to as yet uninfected sexual partners. What is needed is a deterrent against risky behaviors, which is effective for both the active transmitter and for the as yet uninfected individual (Section 3).

In the context of this time lag, a central problem lies with those who are unaware of their HIV infection. Depending on the algorithm of calculation, in Europe they represent from at least 30% to 50% of the total number of HIV infected people (European Union, 2009a; 2009b; see also Marks *et al*., 2006). Due to its long latency stage, HIV is spread inconspicuously among the population, thereby creating an unrecognized but continually expanding reservoir of carriers, most of whom are unaware of their HIV status and in turn, the risk they pose to sexual partners, and their role in spreading the disease within the population. These transmission chains may not be interrupted until client-initiated-testing or provider-initiated-testing for HIV is carried out and accompanied by a supportive service and voluntary counseling and testing (VCT) with respect to therapy and prevention measures. During the time before diagnosis—and for too many people thereafter—the person-bound spread of HIV is influenced by phylogenetically coined sexual behavior (for details see Section 3). Moreover, the efficiency of HIV transmission is facilitated through co-infections of other STIs, which are also on the rise. The result of all this is that currently an estimated 34 million people are living with HIV globally and at least 27 million people have already died (UNAIDS, 2009a; 2009b). Effective for 2008, the proportion of people unaware of their HIV infection is estimated to be up to 90% with regional differences.

"Of particular concern is the high number of persons who are not aware of their infection. About 30% of people in the European Union and up to 70% of people in several neighboring countries do not know their HIV status (Annotation: although the prevalence of PLWH is below 1%, the socioeconomic burden is high and still rising). This presents a serious concern for policy makers." "These people, unaware of being infected, may transmit HIV unknowingly and seem to be a significant contributor to the spread of HIV" (European Union, 2009a; 2009b; see also the Aids2031 Consortium, 2010). "These people may transmit HIV unknowingly and seem to be a significant contributor to the spread of HIV" (European Center for Disease Control, 2007). Depending on the global region, too many of them are being HIV tested as "late presenters" with far-advanced stages of HIV disease (mostly with $CD4^+$ cell counts below 350 μl^{-1}, although no clear cut definition is available). The reservoir of people who do not know or do not want to know their HIV-positive (HIV^+) status is being promoted by those who defend the "right not to know" (RNTK) reflected in the opt-out approach (OOA), which is an essential element of current prevention strategies (Section 4).

The uniqueness of the replication cycle of HIV favors adaptation in its new host with ongoing generation of viral genetic diversity (Gifford *et al*., 2007):

1. The high rate of mutation due to the error prone HIV-1 reverse transcriptase which lacks proof reading, leads to mutations causing resistance to antiretroviral drugs and changing immunogenic epitopes which then leads to immune escape mutants.

2. The peculiarity of the occurrence of recombination of genome segments during replication in the case of double infection with different strains of HIV, forming circulating recombinant forms (CRFs).

3. The high rate of replication, thereby favoring selection of drug resistant mutants while under combination antiretroviral therapy (cART).

4. Human beings are the exclusive hosts, therefore human sexual behavior indirectly boosts these characteristic traits of HIV and offers optimal conditions for its spread and ongoing evolution (Kandathil *et al*., 2005; Taylor *et al*., 2009; Esbjörnsson *et al*., 2010; Zhang *et al*., 2010), besides special situations with injecting drug users (IDUs), e.g., sharing vehicles like needles or syringes contaminated with HIV.

5. Its evolution is further pushed by the spread of different HIV type I subtypes through modern modes of "travel" (Gifford *et al*., 2007) thereby favoring the forming of CRFs by HIV superinfections with yet unknown sequelae (Thomson and Nájera, 2001; Blackard and Mayer, 2004; French *et al*., 2006; McCutchan, 2006; de Oliveira *et al*., 2010).

Carter (2010a) mentioned Gurirab's words that "parliamentarians have a duty to protect the rights of all citizens, including people with HIV," and "by placing restrictions on the travel and movement of people with HIV, we needlessly rob them of their dignity and equal rights." Scientifically based information is necessary to inform the public of both sides of this conflicting situation (Perrin *et al*., 2003; Paraskevis *et al*., 2009; Cohen, 2010b).

Of those infected, about 5% belong to the long term non-progressors (LTNPRs) group. They represent healthy carriers who must be considered infectious although an unknown proportion of them, to a greater or lesser extent, are unaware of their status. Furthermore, there are HIV controllers and elite controllers (ECs). ECs represent a distinct subset of untreated patients who appear to be able to completely control viral replication (Blankson, 2010).

In view of the particular temporal structure of the course of the HIV infection, there is almost no legal HIV adapted scope to be applied to apart from very rare situations due to interpersonal conflicts (details are described in Section 5).

Furthermore, the genetic makeup of an individual may modify the course of HIV infection. For example, the extreme CCR5Δ32 deletion mutation protects against infection.

3 "Actors" responsible for spreading HIV

The "actors" responsible for spreading HIV are a group of individuals of heterogeneous composition: already infected with HIV knowingly or unknowingly, and not yet infected with HIV, but at risk. Their behavior ranges between extremes, from immature or irresponsible, uncontrollable or compulsive sexual urges, hetero- or homo-sexual, to prostitution and dependence on drugs. Also, people not normally perceived to be at risk, and those with modest risky behavior are involved in transmitting or acquiring HIV by casual sex or drug use. This is summarized here in the risky lifestyles of people lacking perception of the risk that HIV poses. The spread of HIV occurs in the range of large transmission clusters and two-person clusters (van de Laar, 2009; Bezemer *et al*., 2010). However, particularities concerning ethnic communities and immigrants have to be considered (Burns *et al*., 2009). A study from the UK showed a different dynamics of (clustered) viral transmission in the hetero-sexual risk group (slower dynamics) than that among men having sex with men (MSM), and further reflected the spread of non-B HIV subtypes (Hughes *et al*., 2009). Different partnership patterns in Africa, for example, reveal that the cultural matrix based on traditional coined behavior can affect the dynamics of the spread of HIV, and sheds light on the problems facing the prevention campaigns in these countries (Halperin and Epstein, 2004; Pettifor *et al*., 2004). But there are also "bridging-people" crossing risk groups, clusters and so forth with different peculiarities who may contribute to some degree to further "mixing" and spreading of HIV (and other STIs like HCV) to risky-sex prone individuals of the communities (Giuliani *et al*., 2009; Ndiaye *et al*., 2009; Chalmet *et al*., 2010).

HIV infected individuals are the potential infectors. Data for the USA reveal the high rates of new HIV diagnosis among US gay men (Carter, 2010b). "The major at-risk populations in Europe are also men having sex with men, which account for about 40% of all new infections in the European Union, migrants from high prevalence areas, and injecting drug users, the last group being responsible for up to 70% of all new infections in European Union neighboring countries" (European Union, 2009b). The review presented by Beyrer (2010) reveals the deficiencies in taking care of MSM in developing countries. The growing concern of HIV transmission by MSM in China is discussed by Feng *et al*. (2009). A study from China indicated that the HIV^+ rate of MSM in Beijing was 4.6% (2.2%–7.6%) and of those 56.3% (50.9%–62.5%) were reported having had a bisexual sex preference (Ma *et al*., 2007).

It is a sad fact that too many of those at risk are simply not able or not willing, for various reasons, to follow the advice provided by prevention campaigns. Their behavior ranges from acting willfully or unconcernedly with reckless disregard for their health or that of others, or not being able to evaluate the remaining infectious risks, particularly those under cART or a combination thereof. Those who are responsible for spreading HIV have, during the past decades, had the chance to assume responsibility for their behavior, but too many of them failed to do so. They had the chance to cooperate in defeating the perils emanating from HIV by following the advice of the prevention programs, but did not. Too many people of volatile disposition, despite being aware of their HIV^+ status, do not comply with the imperatives, although not always deliberately, while many still uninfected but at risk do not implement self-protection responsibly.

Regarding IDU, a statement makes the point "… in Eastern Europe und Central Asia … we are seeing a new upturn in infections in some countries of the region—a new generation of drug injectors is going through the same pattern of HIV spread as the previous generation" (Sidibé, 2010; see also Cohen, 2010a). Sidibé (2010) further reported on success in efforts to reduce harm for drug users in Eastern Europe and Central Asia. Indeed this kind of pragmatism instead of punishment in the countries mentioned looks encouraging at first glance, e.g., access to clean needles, opioid substitution, and withdrawal therapy for opiate users, cART for HIV-infected drug users and more (Mathers *et al*., 2010). Strictly following risk reduction measures will help these people. However, this vision does not include the relapse rates of drug users under therapy (Backmund *et al*., 2008; Li *et al*., 2010; Meade *et al*., 2010). The rate of sustained success seems to be too low and will not really help to stop the spread of HIV and other blood-born infections with shared routes of transmission, such as hepatitis B virus (HBV) and hepatitis C virus (HCV), in this at-risk population (Matthews *et al*., 2011).

Individual motivation, indicated above, essentially holds true for people in developed countries, especially the industrialized high-income countries with highly developed economies and media, i.e., a communication infrastructure. In developing and low-income countries, quite different conditions have to be taken into account, e.g., widespread poverty, inequality, tradition-based sexual behavior, social norms such as polygamy, violence against women, and cultural trends. Strategies for HIV prevention in these countries have to be adopted accordingly (Michielsen *et al*., 2010). This also applies to treatment as prevention (TASP) strategies executed in resource-limited settings (Marazzi *et al*., 2008). It concerns infrastructure settings necessary for medical service and management.

4 Strategies for preventing the spread of HIV

1. The concepts behind the current campaigns are largely based on models of New Public Health (NPH), which differs from convention in the way that health risks and health problems are handled. Instead of focusing on HIV^+ individuals, emphasis is placed on the population, with more thorough analysis of the social factors influencing health and disease, especially those responsible for inequality (Rosenbrock, 2001). Social learning strategies are an essential element of NPH. The concepts focus on widespread information as well as education, risk-reduction intervention, counseling and influencing individual behavior by targeting people's complex behavioral patterns, besides promotion of safe sex campaigns, i.e., the use of condoms ("Condomise!") , and "safe

use", i.e., no needle sharing. The campaigns have typically focused on individuals at risk for HIV infection rather than on PLWH (Stall, 2007), and often disregarded the various compositions of those groups at risk. This social learning strategy presupposes the everlasting cooperation of those at risk for spreading HIV (Pott, 2007). That is spurning all reason.

2. "Safe sex strategies based on socially responsible behavior of HIV-1 carriers over many years to achieve voluntary biological isolation are ineffective in breaking the transmission chain, even among literate populations" (Ioannou, 2003; see more details in Crepaz and Marks, 2002). Those who are responsible for designing prevention campaigns have failed to understand that their good advice targets only the cognitive level of those addressed, when their behavior is largely determined at a deeper, subconscious, more emotional, psychosocial, and drive-dominated level which furthermore can be complicated by substance abuse (Elam *et al*., 2008).

3. Rational control is generally greatly restricted when it comes to behavior related to sexual urges and drug dependence. This holds true also for the abstinence-plus HIV prevention programs (Underhill *et al*., 2007). But these concepts carry risks such as fatal errors regarding the actors mentioned here when regarding the scale at which they should work (Cohen, 2007; Berg, 2009; Rosser *et al*., 2009).

4. The messages of the prevention campaigns are correct and are accessible to everybody in most countries of the globe. However, the messages have failed to reach at-risk people among the actors. It is a fact that too many people are simply not willing for various reasons to follow the advice of the prevention campaigns (for details see the end of Section 3). There is a reluctance due to a variety of personal motivations among those at-risk people to have themselves formally tested for HIV, and not least because they are supported in their irresponsible attitude by decision makers, advocates and representatives of these exceptional groups which defend "a person's right not to know about a potential HIV infection". Offers for informal HIV testing are given including voluntary testing and counseling (VTC), like point-of-care testing. Knowledge about a person's HIV^+ status is important, but its implementation for responsible behavior in reality is another story (Crepaz *et al*., 2009). Such an attitude has to be seen in the context of the long latency period during which the HIV can be transmitted to others. At present, the priority is given to protecting the individual's rights, thereby preventing realistic interventions for transmission of HIV and thus putting other people's lives at risk. This is not in the general mutual self-interest of the societies to which those at risk belong and on whose solidarity they depend.

5. Those responsible for tailoring the concepts for prevention campaigns have failed to understand that this approach is rooted in the humanity of human beings and have therefore adopted the misconception that sexual drive has a biotic source, which is regulated at an emotional level thoroughly and permanently (Morin, 2007). Rational control is generally restricted in behavior relating to dominating sexual urges and drug dependence.

6. In China, a comprehensive management mode of prevention and intervention in HIV/AIDS is being conducted, including extensive and thorough health education for knowledge of AIDS prevention and voluntary blood donation, and the establishment of the social environment for supporting and caring for AIDS prevention and control; promotion and implementation of effective interventions, such as safe sex, methadone maintenance treatment for drug users, preventing mother-to-child transmission; implementation of the "Four Frees and One Care" policy to HIV/AIDS patients; and a sound surveillance system of HIV/AIDS (The Central People's Government of the People's Republic of China, 2006).

7. HIV exceptionalism (Frieden *et al*., 2005; Bayer and Fairchild, 2006) and its consequences.

(1) Based on progressive concepts and the legal implementation of individual human rights, a situation known as "HIV exceptionalism" has been developed, which effectively protects carriers and potential carriers of the HIV from being forced to behave responsibly if they choose not to, e.g., if they refuse testing and remain ignorant of their HIV status. Customizing this situation has established taboos for these people. This liberal model turned out to be like a shelter for them because any kind of restriction to enforce accountability or at least self responsibility was excluded. And serious sequels developed: At the beginning of the HIV/AIDS pandemic, gay men/MSM as a marginalized group and most hit by HIV, acquired the status of an exceptional group, which

could be offered advice, but of whom it was effectively taboo to make specific demands. They were and still are tolerated to continue risky lifestyles, if they so choose, anonymously promoting the onward transmission of HIV and other STIs. It is an anthropological fact that the given rules and even a moral dictum "do no harm to other people" are being flagrantly breached because of the onus placed on individual rather than collective needs, i.e., public rights and protection. This is being exacerbated by the unique time delay in the course of HIV infection which, with little risk of being detected after having infected another partner, excludes any immediate disciplinary action (for details see Section 2).

(2) Exceptionalism is boosted by established "group specific norms" which do not chime with well-proven social norms. The HIV infection was sequestered from other (generally accepted as "normal") STI with similar routes of transmission, which led to a particular form of "stigmatization" and a form of psychological stress, a psychosocial epiphenomenon, the "power of shame", which now affects most people infected with HIV.

(3) HIV exceptionalism is of personal, though dubious, benefit to those already infected but at a high cost to others and public health in general: (i) there is no mandatory testing, (ii) the right not to know one's HIV status, i.e., OOA (see below for details) is accepted, and (iii) public health services are not allowed to carry out contact tracing in the search for people who may be a source for spreading HIV, thereby failing to provide VCT and cART in an attempt to interrupt chains of transmission.

(4) These misconceived, liberal concepts of prevention disregard the scale of their misuse by certain individuals. Is society obliged to tolerate this situation, in which the narrow, egotistical self-interests of certain individuals are prioritized over the interest of society at large, from which they expect the support and solidarity they need? The vast majority of those at risk, but who feel and act responsibly, are not to blame, but those who refuse or are unable to act responsibly, thereby disregarding and exploiting liberal attitudes and continuing to spread HIV, degrade human life, and violate the very HR by which they themselves are protected. It is a grotesque situation which liberal society, with the best of intentions (or so we like to believe) has created for itself.

(5) Acceptance of HIV exceptionalism has misled governments into tolerating HIV transmission and its devastating consequences for other citizens. Due to this exceptionalism, claims were developed against constitutional norms, e.g., the decriminalization movements. This disregard of the consequences of such a misconceived liberal policy has, for an irresponsible few, made infecting others with HIV normal practice without any fear of personal consequences.

(6) This is true in particular for those whose lifestyles include extreme consensual risky practices which could result in the transmission of HIV, HBV, HCV, and other STIs or a combination thereof (van de Laar *et al*., 2010).

(7) Furthermore, the influence of neurocognitive disorders due to the HIV infection itself [HIV associated neurocognitive disorder (HAND)] and opportunistic infections of the brain, e.g., toxoplasma gondii, cytomegalovirus which may contribute too, have yet to be taken into account (Lawrence and Major, 2002; Anand *et al*., 2010). The sequels of neurological impairments include more HIV-risk behavior and poorer cART adherence. Neuro-AIDS remains prevalent in spite of cART (Brew and González-Scarano, 2007; Fessel, 2009; Simioni *et al*., 2010). The basics of social learning strategies have never incorporated these long-known facts, especially for people unaware of their HIV infection. In addition, the cognitive dysfunction often associated with HCV, particularly in the case of coinfection with HIV, needs a thorough investigation (Wilkinson *et al*., 2009). A meta-analysis of data collected in the Chinese mainland indicated that HIV/HCV coinfections among drug users amount to 7.19% (5.99%–8.40%) (Wang H.P. *et al*., 2010).

(8) Depending on the country in question, current prevention campaigns may have reduced the speed at which HIV has spread to some extent, but have nevertheless failed in their essential goal (Gorbach *et al*., 2002). People ignoring the correct prevention messages for various reasons: do not feel obliged to take measures against HIV transmission and receive no benefit from cART. It was a fatal mistake to have relied solely on liberal NPH concepts which assumed the full cooperation of those addressed by prevention campaigns (Bajos *et al*., 2010), resulting in a failure to consider and understand their limitations. Extending current prevention strategies to

syndemic concepts could help in designing more coherent strategies (Singer *et al*., 2006). However, this should not deflect from the shared responsibility partners must be aware of regarding person-to-person bound HIV transmission.

(9) Prevention concepts have to be amended considering the effects of HAND and making reference to late outcome ailments in spite of response to cART, to improve individuals' awareness of the need to balance high-risk behaviors against harm reduction, in plain language. A multitude of various concepts and strategies have to be developed which also incorporate cultural features and trends in social development.

5 Legal frameworks

1. To make legal frameworks clear, consider a hypothetical case in which, after infection with HIV including an infectious latent stage, the infected person becomes sick within one week and dies soon after. The cause-and-effect situation is quite obvious. Only non-specific HIV criminal laws are applicable, although they may differ from country to country. In reality, however, there is a lack of immediateness of an outcome after infection with the real HIV (fixing the cause), and the eventual outcome (finally AIDS) occurs years later. The de facto consequence is that the non-specific HIV criminal laws are inapplicable in the vast majority of cases (Lazzarini *et al*., 2002).

2. The complexity of the infection process makes it very difficult to allocate cause (responsibility) with respect to sexual partners (infectors and those newly infected) if it comes to a prosecution. The situation is even more difficult when IDUs are involved. Correlation causality becomes improbable due to the combination of the time delay, the phylogenetic burden of proof of the variability of the HIV genomic sequences in infectors as well as in those infected in certain circumstances, and the diversity in behavior when it comes to sexual activities (Bernard *et al*., 2007). Moreover, in certain cases even a deliberate intention along with extreme promiscuity (more than 100 partners a year) is not verifiable at the juridical level (Dennin *et al*., 2009).

3. This situation is prone to abuse and has resulted in the waning of individual awareness and the ignorance of the perception of the partner as a victim. The actors aware or unaware of their HIV infection do not have to fear non-specific HIV criminal laws when it comes to HIV transmission, apart from rare circumstances where verdicts are given. The law is losing its ability to determine its normative imperative to stabilize the legal norms on which society relies. These legal norms represent the standards of our civilization. To prevent the erosion of the structures of legal norms, some countries recognizing these problems have established measures to prevent HIV transmission.

4. Moreover, the transmission of HIV to another person offends against Articles 3 and 29 of HR legislation and therefore should be categorized as a violation of HR (United Nations, 1948).

5. In line with German legislation "… it can be chargeable if an HIV^+ individual aware of his HIV^+ status carries out unprotected sex…". It can be a bodily harm with fatal consequences (Deutscher Bundestag, 1990); i.e., fatal in around 95% to 98% of cases if it remains untreated. In principle, this juridical assessment of the HIV infection is not influenced by antiretroviral intervention by cART.

6. The few cases concerning HIV transmission which have come to court so far in Germany did so mostly because of interpersonal conflicts relating to HIV infection in either homo- or hetero-sexual partnership, in which causality had been verified. They have been taken as legal elements of an offense and are criminally liable. In countries where there is no exceptionalism with regard to HIV and AIDS, the same difficulties of verifiability exist.

7. Regarding juridical assessments in other countries of the European Union (EU) see for examples, Great Britain (Chalmers, 2002; Dodds *et al*., 2009a), Scotland (Bird and Brown, 2001) (for other countries see Nyambe and Global Network of People Living with HIV (Europe), 2005; Weait, 2007).

8. In countries without regulations in default of HIV specific rules, the decriminalization of HIV infection should not be possible for systematic reasons. In countries that have signed the HR Declaration, Article 3 of HR should apply as a superordinated rule not only to protect HIV infected people but also to apply these fundamental rights in order to protect their as yet uninfected citizens. In this context the liability tort has to be included. In view of the pandemic character of the ongoing spread of HIV, the

interests of stable societies should be given priority.

9. Actions are being taken to make the transmission of the deadly HIV a relative issue of law; e.g., the decriminalization of the HIV infection. "UNAIDS urges all countries to respect the human rights of people most affected by HIV" (that is correct) (UNAIDS, 2009c), but:

10. "In some countries, criminal law is being applied to those who transmit or expose others to HIV infection. There are no data indicating that the broad application of criminal law to HIV transmission will either achieve criminal justice or prevent HIV transmission (Annotation: this is the sad reality). Rather, such application risks undermining public health and HR. Because of these concerns, UNAIDS urges governments to limit criminalization to cases of intentional transmission, i.e., where a person knows his/her HIV^+ status, acts with the intention to transmit HIV, and does in fact transmit it. In other instances, the application of criminal law should be rejected by legislators, prosecutors and judges (…). In particular, criminal law should not be applied to cases where there is no significant risk of transmission or where the person: did not know that s/he was HIV^+; did not understand how HIV is transmitted; disclosed his/her HIV^+ status to the person at risk (or honestly believed the other person was aware of his/her status through some other means)" (UNAIDS, 2008) (Annotation: do the members of this committee and others concerned-believe that people aware of their HIV infection—by their feelings or having been anonymously tested HIV^+—would make it public in order to help justice in case of a personal prosecution? The recommendations on what to do do not contain any new basic concepts).

11. Due to this incongruent perception of the reality, and based on a non-realistic appraisal of human behavior, such selective messages will not encourage people at risk to ask for HIV testing. Rather, if they are HIV^+, they might profit by remaining untested officially for as long as the personal status of their health allows. For selfish reasons and tactical management, exploiting a potential unknown HIV^+ status will enable them to remain exempt from punishment should it lead anyway to a criminal prosecution for intentional HIV transmission. It would be akin to sex being a carte blanche to a criminal assault with a deadly outcome—the fatality of the outcome to be reduced by cART.

12. "Laws should work for the AIDS response, not against it; they should never obstruct the health or survival of any individual" (Sidibé, 2011). However, in terms of HIV transmission there is no annotation like this: in equal measure, all people, including PLWH, must comply with given laws, e.g., "Don't harm other people" referring to Articles 3 and 29 of HR (see Paragraph 10 in Section 6). If PLWH would comply with these simple rules, there would be no need to fight against AIDS, and there would be no targets for discrimination.

13. Regulation of this kind might instead foster careless behavior of those described in Section 3, and therefore it might rather contribute to the increase in the number of people unaware of their HIV infection, including the known sequels. However, the protection of human life, i.e., the right to live, is one of the fundamental social norms developed during the evolution of human societies. It became a non-derogable standard which has characterized human civilization. In view of the law it is unacceptable to put other peoples' health at risk. To introduce somebody to a deadly disease is still a criminal offense—whether done intentionally or consensually.

14. The criminalization of the HIV^+ status is not the issue but the carelessness if HIV is transmitted. The decriminalization of HIV transmission represents a destructive norm. Apart from "intentional transmission" it would amount to allowing someone to infect somebody else with HIV. It would become socially acceptable and represents a perversion of justice—what would come next?

15. What are the hidden facts, as yet not disclosed by the initiators of such a "decriminalization" campaign? The consequences would be that a basic pillar of the constitutions of states would be declared void. Policy and law makers would recede from constitutional positions, and the authentic intention of Article 3 of HR (United Nations, 1948) "everyone has the right to life, liberty and security of person" would become a relative issue. It would undermine the understanding that living together in human communities depends on "individual liberties must be subordinated to legal norms for protecting the collective good", which forms part of the "interest of societies". The meaning and very purpose of the social order is brought into question. It would become a matter of

principle challenging the law, and akin to a capitulation like an unconditional surrender of constitutional states in tolerating illicit behaviors of a low portion of people our societies support. Such rules would help such people to step outside of the state's legal monopoly.

16. In spite of an offense against such a basic human value as "you shall not harm other people", you shall not kill", the hidden message is rather: do not worry about the consequences, which, because they are so far removed, need not to be feared or faced up to. The lack of an evident and immediate, or even medium-term, cause-and-effect encourages irresponsible behavior, for which the law is powerless to effect justice, except in rare cases, which have little deterrent effect.

17. Therefore, the actors addressed here, who do not follow the correct messages of the prevention campaigns and who are not willing to exercise personal responsibility, should take over liability for the consequences of their own actions if they become infected with HIV. A specific signal is required to send a serious warning to those people: a special HIV-specific law should be considered constituting the elements of an offense, e.g., a strict liability tort. The aim of such a law would be to balance the interests of the HIV carrier with the interests of society.

At present, people transmitting HIV but protected by the conditions outlined above benefit from such protection without any obligation of a "quid pro quo". Existing regulations do not encourage them to take up the new challenge. Boundless freedom at the personal level creates a destructive potential at the level of communities and against the interests of societies. "Duties to the community", Article 29 of HR, and then seem like an idealistic fiction.

In summary, this declaration should it come into force, would be directed against the interests of the societies and governments for whom administrations are responsible for maintaining the corporate good. It would undermine the understanding that living together in human communities depends on legal norms on which public order relies. Individual liberties must be subordinate to such collective legal norms. Otherwise, when HR and the basic rights of citizens derived from them are used one-dimensionally against their authentic intention, public systems are in danger of becoming fragile. Finally, the campaigns for decriminalization are needless anyway as because of the unique traits of the HIV infection, criminal prosecutions cannot be applied except in a minor number of cases, as outlined above.

6 Human rights

1. HR primarily are seen as "defense rights" for citizens who are to be protected by the state. For comparisons see "The Universal Declaration of Human Rights" (United Nations, 1948) and the "Charter of Fundamental Rights of the European Union (FR EU)": Chapter I, Article 1, Human Dignity; Article 2, Right to Life; Article 3, Right to the integrity of the person (European Union, 2010).

2. Attention is focused on the protection and respect of the HR of those with HIV: (1) "UNAIDS urges all countries… to respect the human rights of people most affected by HIV" (UNAIDS, 2009c), (2) "The violation of human rights of people living with HIV, women and girls, men who have sex with men, injecting drug users and sex workers must end. … On this World AIDS Day, let us work urgently to remove punitive laws and practices and put an end to discrimination against and criminalization of people affected by HIV", i.e., the victims (Sidibé, 2009).

3. However, from the public's point of view, it is not discrimination against certain people and their lifestyles, but just a refusal to accept behavior not compliant with prevention of HIV transmission. Every HIV infection avoided would help to reduce so-called discrimination. It has been mentioned that the reason for what is called "discrimination or stigmatization" differ, depending on the cultural background (Mbonu *et al*., 2009). This also holds true for example, for gender discrimination.

4. However, too many potential infectors neglect their responsibilities towards others and society, thereby disregarding their human and fundamental rights obligations in favor of their own narrow and short-sighted selfishness (i.e., sexual gratification). Discussion of these issues has, regrettably, been taboo, despite its important role in driving the HIV/AIDS pandemic.

5. Therefore, an awkward issue has to be addressed with regard to the actors, HIV^+, HIV naïve, and those at risk, particularly regarding those leading

certain "high risk practices". They use this kind of "protection against discrimination" as a shelter from social control, interpreting such liberal attitudes as granting them freedom to continue with their "high risk lifestyles", to be concerned only for themselves, rather than for their partners and the society as a whole. These individuals do not honor the generous gesture of society to help them. Predominantly, this relates to individuals in countries as described in Section 3.

6. These statements (see Paragraph 2 in Scetion 6) neglect that "victims" of HIV infection covered by the "… respect HR" principle, in turn become offenders when they themselves transmit HIV to a partner(s), thereby violating HR whether aware or unaware of their HIV status. This is further reflected, for example, in high risk behavior resulting in the spread of not only HIV but HBV, HCV, and other STIs or combinations thereof (Verucchi *et al*., 2004; Serpaggi *et al*., 2006; Urbanus *et al*., 2009). HCV has gained access to communities in Europe via social networks (Vachta *et al*., 2009). HR officials should particularly be aware of these scenarios when demanding respect for the HR of those infected with HIV. This concerns the abuse of HR to protect selfishness on account for the communities and societies at large.

7. Over-emphasizing the rights of HIV carriers neglects the rights of completely blameless victims, such as those suffering rape, sexual abuse, and mother to child transmission (MTCT), or subjected to the risk of infection as on occupational hazard in the medical professions, and through blood transfusion.

8. What about violation of HR when infectors infect others? The transmission of HIV injures basic human rights as expressed in "... the protection of human health is indispensable for the protection of human rights ..." (Piot and Ayala-Lasso, 1997). The violation of HR, however, is subject to jurisdiction, whatever institutions are responsible for the enforcement of obligations to societies or their mechanisms of control and enforcement.

9. However, no official institution seems to care much about the violation of HR of those being infected by the irresponsible behavior of a significant number of HIV carriers. The situation at present reflects a highly biased, i.e., uni-directional interpretation of HR in favor of those already infected with HIV. It is a bias which challenges existing state law and undermines the legal systems of countries with constitutional orders.

10. "The International Bill of Human Rights recognizes individuals' duty to the community, creates absolute (nonderogable) rights, and outlines criteria for the limitation of other rights". "Individuals, therefore, have a responsibility to behave in ways that will not harm others, for example, by not exposing their sexual or needle-sharing partners to the risk of HIV infection" (Gostin and Lazzarini, 1997). This is the background when stating "infection of a partner with HIV infringes Article 3 and Article 29 of the General Declaration of Human Rights". This means that HIV infected people also have to accept and follow HR and ethical (still acknowledged) standards. Sticking to abstractly constructed ideals which take no account for the biotic roots of human behavior will gamble away what the authors of HR legislation themselves called "the duty for the community". Longstanding and well-known anthropological experience has not been taken into account: general demands of this kind "… have a responsibility …" remain disobeyed by too many if there is no immediate and appropriate action.

11. Taking care of individual rights is an important issue. However, now that the situation in respect of HIV is on such a large scale (the incidence of HIV is about two million according to UNAIDS), laws originally intended to protect the individual are now being misused by too many people against the interests of society and public health at large.

7 Collisions

Certain HR or fundamental rights (FR) can be at odds with the interests of society at large:

1. The liberalization of many societies in recent decades has undermined their ethical, often religious, standards and expectations which are used to characterize our civilization. This liberalization has resulted in much social progress, but is open to misuse, in the present context by the selfishness, indifference or irresponsibility of potential "at-risk-prone" people, including HIV carriers. Protected by what has now become the social imperative of non-intervention in an individual's personal right, the perception of freedom to realize self-determination without limits regarding certain lifestyles has gained currency. It is

the libertarian basis of avoiding any kind of restriction, such as the basic elements of public policy principles, which facilitates the ongoing spreading of HIV.

2. In view of the original concept of HR as "defense rights" for citizens to be protected against "misuse" by the state, the term "nonderogable" is correct. (1) The issue addressed is the protection of individual HR from state institutions. (2) The issue to be addressed here, however, is at the level of the individual and the impacts of his/her FR on society at large, i.e., in the opposite direction. We are dealing with the misuse of the "protective shelter" provided by HR: (1) By claiming HR, Article 3: "Everyone has the right to life (this is set aside when infecting somebody else), liberty and security of person." (2) "All peoples have the right to self-determination ..." (Gostin and Lazzarini, 1997). This right "a fundamental respect for autonomy…" has been made the basis of the RNTK or the OOA in discussions relating to HIV testing. (3) By the non-contextual application of HR Article 7 relating to protection against "discrimination", whereby the need for personal responsibility, putting this individual right in its social context, remains unmentioned.

3. Only generalized reference to the individual's social obligations is alluded to in HR Article 29 "everyone has duties to the community in which alone the free and full development of his personality is possible." Do those primarily responsible—the HIV infectors and HIV naïve actors—for the continuing spread of HIV care? The enforcement of socially responsible behavior is administered by each particular state's legal systems—but because there are legal gaps, non-specific HIV laws cannot be applied but in very few cases (Sections 2 and 5).

4. HR should not be at odds with liberal lifestyles, but misusing HR to protect selfish and grossly irresponsible and potentially fatal behavior, contradicts the basic purpose and intentions of HR legislation. Individual HR should be seen in their social context, rather than being allowed to infringe the HR of others and the interests of society at large. This has to be seen with respect to the ongoing spread of HIV which is caused primarily by the irresponsible behavior of those at risk or already infected with HIV. These people are able to avoid state intervention to enforce more responsible behavior by demanding respect for their individual HR. Even the European Court of Human Rights (ECHR) recognizes the menace posed by the spread of HIV. The ECHR has established a connection between this menace and the public good by stating "the HIV virus qualifies as a disease sufficiently dangerous to public health and safety as to justify restriction of rights." (Westeson, 2010).

5. The conflict: A paradoxical situation has arisen: HIV transmission represents a bodily injury with a deadly outcome as a rule, and thus is a violation of Article 3 of HR. It is a homicide, which has to be prosecuted officially in agreement with the principle of the mandatory prosecution of offenses. "Generally, restrictions on HR must be prescribed by law in a democratic society—based upon the legislature's thoughtful consideration and necessary to protect a valued social goal—promoting a compelling public interest (e.g., safety or health)" (Gostin and Lazzarini, 1997). In the interest of society at large it has to be asked, whether the complexity of the HIV infection itself and the antisocial behavior of the actors legitimate the negation of "everyone has the right to life, liberty and security of person"? However, the burden of law is high. The ambitious efforts towards decriminalization of the HIV infection could serve to erode the constitutional principles civilization has created. However, there are objections against a "decriminalization" of the HIV infection even from among MSM communities (Dodds *et al*., 2009b).

Thus far, policy makers and legislators have neglected to address the consequences of HR legislation, i.e., its possible misuse. With respect to the transmission of HIV, they did not consider perspicacious measures to counteract possible abuse of the freedoms granted in a liberal society. If governments would seriously assume full responsibility for the communities they serve, they should consider that the personal interests of the at-risk individuals addressed here, in the legitimate interests of society as a whole, have to be given a lower priority than at present.

8 Residual matters

What has to be done in the interest of HIV infected people and in the interest of the societies at large to avoid a harsh future reality? Effective treatments exist, but there is no cure. Prevention is therefore key to combating HIV/AIDS and if we

neglect it, lives and resources will be wasted (European Union, 2009a). Thus far, providing only VCT on a large scale has failed where it is urgently needed to reduce the number of people who do not know they are infected (Alcorn, 2010). It therefore needs modifications like a multi-sectoral response. The concepts of the prevention strategies must be customized in relation to the target groups: MSM are different from IDU, IDU are different from heterosexual people at risk, and so forth. Public health services should be allowed to effect.

8.1 Annulment of HIV exceptionalism

1. The RNTK and the OOA prioritize personal rights over a more vigorous prevention of person-to-person bounded HIV transmission. The individual's human and personal rights are, without question, extremely important, but they should not be allowed to impinge on the fundamental rights of others, i.e., the non-infected. The HIV infection without cART still has a lethal outcome, and disregarding actual human behavior will, through the continuing spread of HIV, result in an increasing burden on society. Strict adherence to the RNTK and the OOA strategy was a mistake, which is perpetuating and increasing the number of people unaware of their HIV infection. The WHO addressed difficulties and approaches: experience in different countries suggests that underestimation of personal risk for HIV is frequent, especially on the part of men and that even with rapid scale-up of these programmes, the people most at risk for HIV may be the least likely to use VCT services (WHO/UNAIDS, 2007). "Fears have been expressed that with the change in emphasis to provider initiated testing the autonomy (and the individual human rights) of the patient to freely decline or accept testing could be undermined" (Collini, 2006; see also Branson *et al*., 2006). Such kinds of objections disregard evolutionary shaped sexual behavior and people not being engaged to become informed. A realistic evaluation regarding these situations in a low income country is described by Kamya *et al*. (2007). Further issues surrounding the OOA are described by Saag (2007). The RTNK is perfectly acceptable when it involves a genetic propensity or the risk of a "non-contagious condition, such as cancer", which are of no threat to others or to society at large. But for someone at risk of being infected with HIV, it is a quite different matter.

2. The HIV infection needs to be down-regulated to the status given for other STIs, and to avoid this current exceptionalism of HIV infection. Those infected with it are being treated quite differently and unequally compared with those with other infectious disease. This situation is close to a kind of a ghettoization of PLWH. Instead, normalization would help rid the infected individuals of this psychic trauma specific to HIV, which was introduced from the outset of the HIV pandemic, and would help make it less of an exceptional case. It would also help sufferers to become integrated in their communities, but the "communities" must know them.

8.2 Extensions and approaches

Besides continuing the current prevention strategies, policy makers have to adjust the next generation of strategies for HIV testing. A combination with the following regulations would help. We propose the following items as a multi-sectoral response as design parameters with respect to extending TASP:

1. Provider-initiated testing upon clinical indication and routine testing should be enforced (Paltiel *et al*., 2006). HIV awareness for physicians and health care workers must be improved (Branson, 2006; Miller, 2009; Hicks, 2010).

2. The promotion of client-initiated-testing and point-of-care offers should be intensified.

3. Pragmatic routine counseling before and after testing should be customized for measures in the above Items 1 and 2 (Goetz *et al*., 2009).

Special services should be offered to individuals at risk and HIV-infected persons:

1. Testing for coinfections/comorbidities, e.g., syphilis (Bissessor *et al*., 2010), HBV, HCV, and other STIs.

2. A neurological check-up for HIV^+ people according to standardized scores.

3. Counseling for HIV^+ people to discover chains of transmission.

4. An obligation for partner notification needs to be introduced.

5. Consideration of an additional approach to reach and test people at risk by including social networks on the Internet (Rosser *et al*., 2009; Holt *et al*., 2011).

Additional concepts which focus on process management are described by Coates and Szekeres (2004).

This would help to reduce the number of persons unaware of their HIV infection, and to increase the portion of PLWH who are aware of their HIV status (Pinkerton *et al*., 2008), thereby promoting treatment, counseling and provision of information about individual prevention measures.

A caring society is prepared and eager to help, particularly vulnerable "risk-taking" people, but has a right and duty to demand the cooperation of those at-risk persons. Therefore, those who do not heed the advice put out by prevention campaigns and fail to exercise personal responsibility should be made liable for the consequences as a last resort, whether actively or passively infected with HIV. HIV infection has gained the status of a chronic disease under appropriate treatment. Therefore, HIV exceptionalism, as it stands, must be abandoned and replaced with the obligatory message "must cooperate".

9 cART treatment project for reducing HIV transmission (TASP)

cART, an antiretroviral treatment, is to be offered according to the updated guidelines (de Cock *et al*., 2009) as part of additional behavioral prevention programs (Rotheram-Borus *et al*., 2009, Padian *et al*., 2008). However, this can work only for those who are aware of their HIV infection; will current prevention campaigns reach the estimated tens of millions of people (globally) still unaware of their infection? How can they be reached when the "right not to know" their HIV status—that their legal advocates insist on—is rooted in HR legislation? Furthermore, such a strategy can work only at a population level; in reality at the individual level, transmission of HIV by patients receiving cART will still occur because of widely varying conditions and situations such as an individual's current viral load (VL), side effects from drugs (cART), uncontrollable sexual behavior, coinfection with one or more STI, special attitudes of drug consumers, inconsistent adherence, and emergence of antiretroviral resistance (Roquebert *et al*., 2009; Fox *et al*., 2010; Rieder *et al*., 2010; Wang L. *et al*., 2010; Carrico *et al*., 2011). Even Act UP, Paris/F warns against relying on cART alone to effect prevention of HIV (ACT UP-Paris, 2009). The same holds true regarding social and economic circumstances of PLWH (Armstrong and del Rio, 2011). However, several studies showing positive effects from applying TASP (Montaner *et al*., 2010) must be thoroughly checked against other data. For example, one study showed persistent genital HIV levels in women receiving ART although HI-VL in plasma was undetectable (Cu-Uvin *et al*., 2010). These strategies may tempt at-risk people (HIV^+ or negative) to be imprudent and also risk infection from other STIs because of a decline in their inhibition threshold (Bezemer *et al*., 2009; Dieffenbach and Fauci, 2009; Donnell *et al*., 2010). This also might hold true for pre-exposure chemoprophylaxis (Grant *et al*., 2010; Michael, 2010). In particular, the riskier routes of HIV transmission require thorough examination (Wilson, 2010; Bengtsson and Thorson, 2010). The statements "there is increased evidence of risk among key populations …" and "the resurgence of the epidemic among men who have sex with men in high-income countries is increasingly well documented" should be taken as serious signals (UNAIDS, 2009a).

At the European Union level, there is particular concern about the high number of people who are not aware of their infection, and therefore this issue is being raised with policy makers. Late diagnosis usually leads to late treatment and to an increased danger of transmitting the virus to partners. However, the starting prerequisites about how to ensure that at-risk people are tested remain open. The commentary by Hale *et al*. (2001) and the statements of the Aids2031 Consortium (2011) provide a disturbing picture of what may happen if the global communities do not take action.

10 Unpopular questions

What is the threat to future generations if neither a preventive vaccination nor a curative treatment becomes available? Is there a saturation level in HIV prevalence with which societies can cope? However, who decides what is acceptable?

The latest data convey a chilling message of the potential silent spread of HIV in future generations. Current concepts and strategies for prevention need supplementing (Vernon and Jumper-Thurman, 2002), and it will probably be necessary to reexamine established paradigms if we are to succeed in protecting

future generations from the scourge of HIV. "There is nothing to suggest that HIV will plateau, or that it will not reach one billion cases before 2050. It is unlikely, but not impossible that HIV could attenuate itself, but when and at what human toll?" (Hale *et al*., 2001). However, "the key fact about HIV is that it is a non-equilibrium infectious agent" (Baltimore, 1995; see also Gifford *et al*., 2007). On an evolutionary time scale HIV is in some respects just at the beginning of its invasion of its new host, Homo sapiens. It is not considered acceptable to criticize a person's lifestyle, which allows them an almost unlimited degree of freedom regarding their individual self-realization, even when they show little regard for the consequences it may have for society at large. But if we do not broach the subject of what to do about those who refuse to behave responsibly, our societies will be paving the way for the spread of HIV in future generations. "There have been many successes in the AIDS response in recent times including increases in HIV treatment coverage and prevention of mother-to-child transmission services, and an indication of decline in HIV incidence in some regions." However, at the moment, globally five people are becoming infected with HIV for every two people accessing treatment" (UNAIDS, 2010).

This is the situation that human societies will be facing in the future. Apart from individual fates, policy makers have to consider concomitant financial aftermaths which pose serious social challenges. They have to be reminded of their responsibility for society as a whole.

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