



Canadian HIV/AIDS Clearinghouse

## **CRITICAL ISSUES IN HIV PREVENTION**

# **Impact of HIV Treatment Advances on HIV Prevention**



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The *Impact of HIV Treatment Advances on HIV Prevention* is the first in an ongoing series of reports on *Critical Issues in HIV Prevention*. These reports will examine issues that impact on the programming activities of Canadian HIV prevention educators and combine current research/statistical information with input obtained from front-line workers across the country.

The [Canadian HIV/AIDS Clearinghouse](#) would like to extend special thanks to all of the front-line workers who contributed to the development of this document.

For more information on this or any other HIV prevention subject, contact the HIV Prevention Team at the Canadian HIV/AIDS Clearinghouse at the address below.

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## Introduction

The past few years have seen tremendous advances in the treatment of HIV. The development of highly active antiretroviral therapies (HAART, also known as combination therapies or drug cocktails) have drastically altered the state of the AIDS epidemic in Canada. Between 1993 and 1998 the number of AIDS cases declined by 89.5% (1,751 in 1993 vs. 279 in 1998).<sup>1</sup> The number of annual AIDS-related deaths decreased from a high of 1,421 in 1995 to 151 in 1998.<sup>2</sup>

Not only are fewer Canadians being diagnosed with AIDS and dying from AIDS-related illness, the quality of life of many HIV positive people (PHAs) on HAART has also improved. People who were once on disability are now returning to work. People who had given up are now planning for their future. While the success of HAART is good news for the people living longer, healthier lives, these treatments are not the miracle cure that they have been portrayed to be in the media. There are many problems associated with these treatments that limit their effectiveness (see “The Down-side of HAART”).

One area concerning the new treatments that has not been fully explored is the impact that HAART have on HIV prevention. There has been a lot of speculation as to how hype about these treatments is impacting people’s perceptions of HIV/AIDS and their adoption/maintenance of risk reduction behaviours. There has also been much questioning as to how the treatments, in particular their ability to reduce viral load, impact on infectiousness and the actual transmission of the virus.

In order to address these issues, we conducted internet and literature searches to find out what researchers and HIV prevention experts are saying about HAART and HIV prevention. We also contacted a number of front-line workers from AIDS service organizations and public health units from across Canada to learn about how the treatments are impacting their work. Specifically, this paper examines three critical HIV prevention issues

## The Downside of HAART<sup>3</sup>

- The drugs do not work for all people. Despite HAART some PHAs continue to get AIDS and die of AIDS-related illnesses.
- The long-term effectiveness of these treatments is unknown. The new drugs have only been available for a few years. While the new therapies have reduced the amount of HIV in the blood of many PHAs (called viral load), they do not completely eradicate the virus from the body. HIV may still be present in the lymph nodes, brain, or white blood cells and viral load can escalate to pre-treatment levels (and beyond) if treatment is interrupted or fails.
- These therapies require patients to follow complex treatment regimes. Multiple medications must be taken several times a day. Some of the drugs must be taken with food, some without. Some drugs must be taken every 4-6 hours, others must be taken only in the morning or at night – and these drugs must be taken for the rest of the PHA’s life.
- Many PHAs develop serious side effects which force them to stop taking their medication.
- The long-term consequences of taking these drugs for many years are unknown.
- The treatments are very expensive. Because of the high costs, these treatments are not available to everyone who needs them. This is particularly true in developing countries (where over 90% of new infections are occurring).
- PHAs who miss doses of their medication may be at increased risk for developing drug-resistant strains of HIV. If these strains are transmitted to others and spread widely, HIV infection could become even more difficult to treat.
- For a variety of reasons (including some of the points mentioned above), many PHAs are not using HAART. A 1998 study found that only half of the 12,000 Ontarians who have tested HIV positive were receiving HAART therapy.<sup>4</sup> A Vancouver study had similar results and also found that injection drug using PHAs and HIV positive women had relatively low use of HAART.<sup>5</sup>

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relating to HAART: 1) Does the decreased viral load associated with successful HAART equal decreased risk of transmission?, 2) Have HAART impacted on risk-taking behaviour? and, 3) How are HIV Prevention Educators addressing the prevention challenges created by HAART?

### **Does reducing viral load reduce the risk of transmitting HIV?**

Much of the optimism associated with HAART is focused on their ability to reduce “viral load”. The term “viral load” refers to a measurement of how many free-floating HIV particles are present in a sample of blood. The lower the viral load, the better prognosis is as far as the progression of HIV disease is concerned. Many PHAs on HAART have been able to achieve viral load levels so small that they are below the level of detection of currently available tests.

In terms of HIV prevention, the key question related to viral load is “Does reduced viral load reduce the risk of HIV transmission?” A number of researchers now believe that the answer to this is probably yes, in that they believe that the new treatments should reduce the overall rate of infection in populations with access to the medications - although this has yet to be seen.<sup>6</sup> In terms of individuals engaging in high risk behaviours, the answer is much less clear. We have not come across anyone who has downgraded the level of risk associated with activities like unprotected vaginal/anal intercourse or needle sharing based on the notion that decreased viral load equates to decreased risk of transmission.

At first glance, the notion that lower viral load should lead to reduced infectiousness seems obvious. Fewer particles of HIV present in the blood means that there are fewer particles to be transmitted, therefore, decreased chance of transmission. This appears to be backed up by science as there are several studies that have found that infectiousness is directly related to viral

load levels. These include a 1996 study of PHAs infected via blood transfusions that found that participants with higher viral load were more likely to transmit HIV to their partners than those with lower viral load,<sup>7</sup> and a 1997 study of HIV positive hemophiliacs in Pennsylvania that found that men with higher viral loads were more likely to transmit HIV during unprotected sexual intercourse.<sup>8</sup> A 1999 study of 415 HIV-discordant heterosexual couples in Uganda, published in the *New England Journal of Medicine*, found that “viral load was the critical factor among the couples in our study ... We observed a clear dose response. For every ten-fold increase in the concentration of HIV in the bloodstream, transmission more than doubled”.<sup>9</sup>

Of course, some of the most compelling evidence in terms of the relationship between viral load and HIV transmission comes in the area of vertical transmission where a clear link has been established between reduced viral load and a reduction in the risk of perinatal transmission.<sup>10</sup>

While there is evidence to indicate that HAART may reduce infectiousness, does this mean that an HIV positive person who is doing well on treatments can have unprotected sex or share needles without worrying about transmission? The answer for them, and for everyone else, is a clear no. There is still a need to adopt and maintain safer sex and needle using practices. The reasons are as follows:

#### **1. Low viral load does not mean no HIV**

Just because viral load is reduced doesn't mean that HIV has been eliminated. Viral particles are still present, they are just present in amounts below the level of detection of currently available tests.<sup>11</sup>

#### **2. Low viral load in the blood is not the same as low viral load in semen and other body fluids - like vaginal secretions, breast milk, etc.**

HIV can be present in different body fluids in different levels. Although new research suggests that suppression of HIV in blood is paralleled by a

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reduction in HIV particles in other body fluids like semen and vaginal secretions, it is not known how quickly these reductions occur and if they are sustained at levels similar to that found in blood.<sup>12</sup>

### **3. Viral load in the blood and other body fluids can vary over time and even in different areas of the body.**

Studies have shown that for any given individual, viral load can vary greatly. Having the flu or other illnesses can increase viral load.<sup>13</sup> The same may occur after a vaccination. In addition, viral load can vary in different parts of the body. For example, viral levels may be higher at the site of an infection, like a sore caused by an STD.<sup>14</sup>

### **4. Free-floating virus may not be the only way that infection takes place.**

HIV reproduces by inserting “provirus” – the DNA instructions to make more HIV – into an infected person’s cells. Basically, HIV uses the infected person’s own cells – particularly the T-cells – to reproduce. HAART do not kill HIV. They help to reduce viral load by inhibiting the replication of new virus. Viral load tests measure HAART’s success by counting the level of free-standing HIV particles in the blood. However, new studies have confirmed that, even with undetectable viral load, HIV, and the instructions to make more HIV, can still be present inside some cells. If these cells are transmitted, they can potentially begin making new HIV and infection can occur.<sup>14</sup>

### **5. How low is low enough?**

Although there appears to be a relationship between viral load and infectiousness, the extent of this relationship is not known. There is still a lot about transmission that we do not know. Factors such as how fast the immune system responds to the presence of HIV and how quickly HIV begins to replicate appear to play a role in infection. What we do not know is how much, or how little virus is required for transmission to occur.<sup>15</sup>

Despite the theoretical benefit that HAART may provide in reducing overall infection rates at a population level and the tremendous impact that HAART has had on vertical transmission, there is still a very strong need to adopt and maintain risk reduction behaviours. This has not changed because of the availability of HAART.

In addition, any potential benefits of HAART in terms of reducing transmission are even further minimized by the fact that many PHAs are not able to access/maintain HAART (upwards of 50% in studies in Ontario and B.C.) and that HAART is also of no benefit to the estimated 15,000 Canadians who are HIV positive but unaware of their status.<sup>16</sup>

### **Have HAART impacted on risk-talking behaviour?**

Our search found that initial studies about the impacts of HAART on risk-taking behaviour produced very mixed results. This may be attributed to the newness of the therapies and skepticism as to their long-term effectiveness. As HAART have become more firmly established and their effectiveness proven over a longer period of time, research is becoming more conclusive. Several recent studies, presented at the 12<sup>th</sup> World AIDS Conference in 1998, the 1999 AIDS Impact Conference, the 1999 National (U.S.) HIV Prevention Conference, and the 7<sup>th</sup> Conference on Retroviruses and Opportunistic Infections suggest that, for some people, there is a link between optimism about the new therapies and engaging in high-risk behaviours.

Much, although not all of the research we found, focused on gay men. This may be because the majority of PHAs in countries where HAART are more readily available are gay men. It may also be attributed to the recent rise in the number of new infections among gay men in the United States, and the increased publicity and awareness of unprotected sex among gay men, which has recently come to be known as barebacking.

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The following are examples of recent studies that have examined HAART and risk behaviour:

- A University of Southern California study of 410 gay men in West Hollywood, California found that, among HIV negative men (346), those who were confident about the ability of drugs to control AIDS said they used condoms 74% of the time for anal sex. Those who were less confident said they used condoms 85% of the time. For HIV positive men (64), those who were optimistic about the therapies used condoms 66% of the time, compared with 85% condom use for those who believed the drugs were less effective.<sup>17</sup>
- A Center for AIDS Prevention Studies and AIDS Research Institute study in San Francisco surveyed 430 HIV negative gay men in 1997-98. Men who agreed with the statement “If I got infected today, there’s a good chance there’d be a cure for AIDS before I ever got sick” were significantly more likely to report being at “high transmission risk” (having unprotected anal intercourse with a partner of unknown or discordant HIV status) (34% vs. 21%). They also had a greater mean number of sex partners in the past year (17 vs. 14). Men who agreed with the statement, “HIV positive men on protease inhibitors or the new combination drugs are less likely to transmit HIV” were more likely to report “high transmission risk” than men who disagreed (35% vs. 22%).<sup>18</sup>
- A cross-sectional survey of 4,091 homosexually active men in two Australian cities in 1998 found that two optimism items, “I am less worried about HIV infection than I used to be” (endorsed by 34% of participants) and “A person with undetectable viral load cannot pass on the virus” (endorsed by 7% of the participants) – were significantly related to increased levels of “unprotected anal intercourse with casual partners”(UAIC). For HIV positive men, only the second statement – “A person with undetectable viral load cannot pass on the virus” – was significantly related to increased UAIC. Also of interest is that being on the new treatments was unrelated to increased UAIC for HIV positive men.<sup>19</sup>
- A 1998 study of 1,018 gay men attending gyms in London, England found that HIV negative men who were less worried about HIV since treatments had improved were more likely to report “high risk” (unprotected anal intercourse with a partner of unknown or discordant status) than negative men who were not as optimistic (21% vs. 9%). No such association was seen among HIV positive men. The researchers conclude that, among HIV negative men, optimism is strongly associated with high-risk unprotected anal intercourse.<sup>20</sup>
- A study completed at Laval University with 136 young adults intended to evaluate possible changes in predisposing factors to sexual preventive behaviours related to the new therapies, found that intentions to use condoms with a new sexual partner are likely to be modified by the expected outcome of the disease – chronic versus deadly. The researchers recommend that interventions aimed at young adults should take into account the impacts new treatments are likely to have on preventive behaviours.<sup>21</sup>
- The American HIV Testing Survey (HITS) assessed recent HIV risk behaviours and whether persons had less concern about becoming HIV positive because of the availability of more effective therapies. Anonymous structured interviews were conducted with 1,976 men who have sex with men (MSM) recruited at gay bars, 600 street-recruited injection drug users (IDUs) and 683 heterosexuals recruited at sexually transmitted disease clinics from 7 states. Overall, 31% reported they were less concerned about becoming HIV positive and 17% reported that they were less careful about sex or drug use because of better treatments. A higher proportion of IDUs reported being less concerned (41%) compared with heterosexuals (30%) and MSM (25%). A higher proportion of IDUs also reported being less careful (25%) compared with heterosexual (15%) and MSM (13%).<sup>22</sup>

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The results of these studies, and several others, do suggest that the HAART are having an impact on peoples' perceptions about HIV/AIDS and their maintenance of risk reduction behaviours. However, some care must be taken when interpreting these results. Many of the studies focus on specific communities of men who have sex with men. It is difficult to generalize the results of these studies to gay men in general and to other at-risk populations. While some of the studies produced results of treatment impacts on HIV negative vs. HIV positive participants, based on our review we cannot say that PHAs are more or less likely to engage in high risk behaviour than negative participants based on their perceptions of HAART.

We also need to remember that while the results presented above are statistically significant, the majority of participants in all studies we examined were still concerned about HIV and did practice risk reduction the majority of the time. Finally, while these studies focused specifically on the new treatments, there may be several other factors that impact on perceptions and behaviour. Rick Sowadsky, prevention expert for the Body ([www.thebody.com](http://www.thebody.com)), commenting on the recent rise in the number of new HIV infections among gay men in the U.S. stated that, "There are multiple reasons for this resurgence of unsafe sex practices. Some men have just become tired and bored with practicing safer sex. Some men have gotten sick of using condoms every time they have sex. Others are too drunk or high on drugs to use condoms, or use them correctly. And some men have simply become less diligent about using condoms every time."<sup>23</sup> Edward King (British HIV/AIDS author and Program Director for Medscape's HIV/AIDS web site) states that unprotected sex happens because gay men would rather not use condoms and that treatment advances provide one more excuse to rationalize behaviour the "morning after".<sup>10</sup>

Despite the above caveats, research findings are clearly beginning to indicate that, for some people, perceptions about HIV/AIDS and the adoption and maintenance of risk reduction behaviours are being impacted by the availability of HAART.

Our dialogue with Canadian front-line workers also suggests that HAART are impacting people's attitudes and behaviours regarding HIV/AIDS – although this certainly wasn't unanimous. Some of the workers we spoke with indicated that for their target groups, perceptions about the new treatments did not seem to be an issue. This appeared to be particularly true for street-involved and injection drug using populations.

"It [the new treatments] has had little or no impact on the street-involved youth. They continue to have a fatalistic outlook, no doubt more related to life on the street than anything else."

*Public Health Nurse, Ontario*

"I would say the impact is low to nil ... Most IDUs who either do not know their status or are negative do not seem to have much knowledge about advances in HIV treatment."

*Injection Drug Use Outreach Worker, Ontario*

However other workers - in fact the majority of those we spoke with - did indicate that they were seeing some shifts in attitudes and behaviour regarding HIV and risk reduction, and many of these workers did feel that perceptions about the new treatments were playing some role in this. In general, the target groups that appeared to be reacting to treatment issues the most were gay men and non-street-involved youth.

"There tends to be a widespread misconception that HIV/AIDS is easily treatable. Due to this misconception some people have adopted an "oh well I can take the drugs" approach to condom use and needle exchange. It has become increasingly difficult to break through these attitudes and promote condom use and needle exchange. In many ways we are close to returning to the "it's okay I'm on the pill" approach to sex ... condoms are becoming a thing of the past. HIV/AIDS is seen by many as a chronic, treatable condition that isn't a big deal – great (condomless) sex or sharing a needle is a fair exchange for dealing with an illness that can be treated."

*Education Coordinator, Saskatchewan*

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“My sense is that it has had an impact. It feels like people have relaxed a little bit around being diligent about using condoms, that the perception, however short lived, that HIV is more manageable – not as serious – has given permission to some men to take more risks.”

*Gay Men’s Coordinator, Ontario*

Although recognizing that a link between treatment perceptions and relaxed behaviours towards HIV/AIDS seem to exist, some workers were quick to point out that treatment perceptions were not the only factors affecting this.

“I could easily speculate and tie in an apparent rise in bareback sex to the availability of new treatments but I would hesitate to do so as that could negate all of the other multi-layered issues/social determinants of health that are also at play. I will, however, say that amongst the majority of people that we talk to, HIV is less of a concern now than it was in the past. In particular, young gay men have often not seen the impacts of HIV/AIDS, and may not even know people who are openly HIV positive. I think that this combined with the awareness of new treatments, the current discussion of an HIV vaccine, and other social determinants of health (i.e., drug and alcohol use, history of abuse, poverty, etc.), may all lead to a lowered concern of HIV and potentially to increased vulnerability.”

*Man to Man Outreach Coordinator, British Columbia*

## **How are HIV prevention educators addressing the prevention challenges created by HAART?**

Recent research, and the perceptions of many front-line workers, do appear to suggest that HAART may be impacting some people’s perceptions of HIV/AIDS and the adoption/maintenance of risk reduction behaviours. Given this, and the fact that the primary outcome of HAART - namely decreased viral load - is of no sure benefit in reducing transmission, what are the implications for HIV prevention?

Many prevention experts point out that the availability of new and better treatments actually increases the need for more HIV prevention. With fewer AIDS cases and more people living longer, healthier lives with HIV, the prevalence of HIV in the population is increasing. This means that each risk activity carries an increased risk of infection. This combined with changing perceptions of HIV/AIDS and the adoption of risk reduction, means that the need for prevention is now greater than ever.<sup>24</sup>

In addressing changing perceptions and behaviours related to HAART, prevention experts point out that the hype about the new treatments must be balanced with accurate information. This includes information about treatment effectiveness, accessibility and side effects as well as portraying a realistic picture about what it is like to live on a complicated treatment regime. In addressing this issue, care must be taken not to go overboard. We must not forget that the new treatments are the most optimistic news we’ve had in the AIDS epidemic and that many lives have been greatly improved. As British researcher Ford Hickson points out:

“There is grave danger of gay men’s health promotion responding to treatment advances by attempting to influence men’s sexual behaviour by painting an overly-bleak picture of treatments. This is a knee jerk reaction ... The implication of treatment advances for HIV health promotion include balanced and accessible information-giving, increases in choice and the development of skills: the content of which may be changing but the approach remains the same.”<sup>25</sup>

One area in which some prevention experts are calling for increased attention is prevention programming targeted at PHAs. This issue has always been controversial as it has been perceived as a form of blaming the victim or as having the potential to negate the prevention maxim that everyone has the responsibility to prevent the spread of HIV by practicing risk reduction behaviours. However, with new treatments increasing the number of PHAs living longer, healthier

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lives, and potentially improving and/or increasing their sex lives, the need for targeted prevention for PHAs is greater than ever.<sup>26</sup>

The types of programming efforts suggested include integrated treatment and prevention strategies to help PHAs stay healthy and to maintain safe behaviours to prevent the spread of HIV. These include activities to provide PHAs with accurate and easy to understand information about their treatment (including accurate information about viral load),<sup>27</sup> to support those on HAART to maintain adherence (to maintain treatment effectiveness and to reduce the development of drug-resistant strains of HIV), and to support PHAs in adopting and maintaining risk reduction practices (to protect PHAs from other diseases like Hepatitis B and C and sexually transmitted diseases, as well as decrease the transmission of HIV).<sup>28</sup>

Prevention experts are also calling on educators to understand how treatments may be impacting the perceptions and behaviours of the populations they are working with. This does not mean that educators should disregard all of the other factors that they address when promoting risk reduction strategies. It does mean that educators need to be aware of this as a potential issue, they need to assess changing perceptions as a concern with their target populations, and they need to adjust their programming accordingly.<sup>7</sup> As we will see below, the type of responses can vary greatly depending on how much of an issue treatment impacts are perceived to be.

We received a wide variety of responses when we asked front-line workers how they were responding to this issue (many mirrored the items above). Some indicated that as they weren't seeing any impacts, they were not

addressing it but instead focusing on other issues. Others indicated that they attempt to keep up-to-date on treatment advances and related issues so that they can respond to treatment questions from their clients. Some front-line workers said that they distribute treatment information and make referrals to treatment services to ensure that their clients are fully aware of HIV treatments, both the pros and the cons.

Those front-line workers who are seeing changing perceptions as more of an issue have adopted some unique responses. These include:

- incorporating treatment issues into their prevention programming (support group discussions and training for peer educators) and resources (i.e., pamphlets and brochures);
- developing awareness campaigns (i.e., Pride campaign) that celebrate successes in the community as well as the need to continue ongoing safer sex practices;
- involving PHAs in their educational activities so that participants can learn first-hand what living on HAART is like;
- attempting to make their HIV prevention more relevant to their clients by linking it with the prevention of other sexually transmitted diseases, Hepatitis B and C, and pregnancy.

One group we contacted was developing an HIV medication simulation with their education groups (giving participants coloured jelly beans and a dosage schedule) so that they can better understand what treatments regimens are like.

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## Conclusion

There is no doubt that Highly Active Antiretroviral Therapies (HAART) have had a tremendous impact on the AIDS epidemic in Canada and have greatly improved the quality of life of many PHAs who have access to them. This being said, there is also little doubt that there are many problems associated with HAART and they are certainly not the miracle cure that they have been portrayed to be in the media.

One area concerning the new treatments that has not been fully explored is the impact that HAART have on HIV prevention. Specifically, how has awareness of HAART impacted people's perception of HIV/AIDS and their adoption/maintenance of risk reduction behaviours? Another key question is, how does reduced viral load impact infectiousness?

From our review, it seems that reduced viral load should theoretically reduce infectiousness – at least in terms of reducing the overall rate of infection in populations with access to the medications. However this has yet to be seen. It is also quite clear that regardless of reduced viral load, there is still a strong need for all of us to adopt/maintain safer sex and needle using practices.

In terms of the impacts of HAART on people's perceptions of HIV, there are several recent studies which suggest that HAART may be changing perceptions and as a result some people may be engaging in risky behaviours. Several of the front-line workers we talked to, although certainly not all, have also observed this.

Responding to the prevention challenges posed by HAART requires front-line workers to realistically assess the potential impacts on their communities and respond accordingly. The studies we have presented are certainly not generalizable to all at-risk populations. It is also clear that not all front-line workers feel that this is an issue for their target populations. At the very least, workers need to balance potential HAART impacts with all of the other socio-economic factors that inhibit the adoption/maintenance of safer behaviours.

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