CANADIAN AIDS SOCIETY | SOCIÉTÉ CANADIENNE DU SIDA

Position Statement

HIV Causes AIDS - How to Respond to Denialist Arguments

Adopted by the Canadian AIDS Society Board of Directors, May 2001.

The documents below summarise the abundant evidence that HIV causes AIDS and addresses **some** of the specific claims of those who assert that HIV is not the cause of AIDS, and may assist you in responding to some arguments presented by those who assert that there is no link between HIV and AIDS. Also attached is the *Durban Declaration*, signed by 5,228 physicians and scientists from over 84 countries, including over 125 from Canada, affirming that HIV is the cause of AIDS.

History of the Controversy

The argument that HIV does not cause AIDS first attracted broad public attention in an article, published in Cancer Research in 1987, written by Professor Peter Duesberg of the University of California in Berkeley. Duesberg's contentions were rejected by scientists, but attracted attention in the mainstream press and found resonance with specific groups outside the scientific community. For example, his attacks on the 'AIDS establishment', whom he accused of perpetuating the myth of AIDS for their own ends, were appealing to a public who already had a growing sense of disenchantment with the medical community more broadly. Similarly, his attribution of AIDS to specific lifestyle choices found favour with parts of society, especially those critical of the gay movement.

At the time that the controversy started, there were still some questions unanswered on the precise mechanisms of HIV disease. Ten years later there is a more complete understanding of how HIV causes AIDS.

Myths and Conspiracy Theories Surrounding Disease

There are many reasons why people may subscribe to myths or conspiracy theories about disease. AIDS, in particular, is a disease that lends itself to the perpetuation of myths and to different forms of denial. For example, myths that deny the existence of AIDS can respond to people's emotional needs or to a desire to reassure themselves that they can avoid changing their behaviour. HIV is transmitted through behaviours that are essentially private.

Visible symptoms of the disease only appear after many years, making it easier for people not to accept that HIV will eventually cause AIDS. Then again, the idea of reexamining the evidence regarding the causes of AIDS may provide hope that if a cause other than HIV is identified, a cure might more readily be found.

However, given that the Durban Declaration, signed by 5,228 physicians and scientists from 84 countries, including over 125 from Canada, who are dedicated to the control of HIV/AIDS, affirms that HIV is the Cause of AIDS, and given that UNAIDS documentation states there is overwhelming evidence that HIV causes AIDS, supported by findings from numerous laboratory, clinical research and epidemiological studies;

The Board of Directors of the Canadian AIDS Society adopts the position that there is clear-cut, exhaustive and unambiguous evidence that AIDS is caused by either HIV-1 or HIV-2, and that this evidence meets the highest standards of science.

Information from UNAIDS Special Report on "HIV/AIDS and the Reappearance of an Old Myth".

The human immunodeficiency virus (HIV) has been decisively established as the cause of AIDS.

Notwithstanding the evidence, a small but vocal group has continued to question the link between HIV and AIDS. Periodically, this results in media attention and generates some renewed public interest in their views. Most recently, there has been controversy in the South African and international media over the South African government's announcement that it would convene an international panel to reexamine the scientific evidence surrounding AIDS, including evidence regarding the cause and diagnosis of the disease. The debate has also recently resurfaced in other countries.

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Key Myths and Facts Relating to HIV as the Cause of AIDS

Myth One: HIV Does not Cause AIDS. AIDS is Just a New Name For Old Diseases

AIDS stands for acquired immune deficiency syndrome.

The human immunodeficiency virus (HIV) infects cells of the immune system, mainly CD4 cells and macrophages - key elements of the cellular immune system - destroying or impairing their function in the process. Progressive HIV infection results in the progressive depletion of the immune system, leading to immune deficiency. The immune system is said to be deficient when it can no longer play its role fighting off infections-, and keeping cancers from developing. People with cellular immune deficiency are much more vulnerable to infections such as Pneumocystis carinii pneumonia, toxoplasmosis, systemic and oesophageal candidiasis, generalized herpes zoster, cryptococcal meningitis, and to cancers such as Kaposi's sarcoma. These diseases are very rare amongst people without immune deficiency. Some of these diseases, namely those that are strongly associated with severe immunodeficiency, are called 'opportunistic' diseases, because they use the opportunity of a weakened immune system to develop.

Immune deficiency can also be present as a consequence of rare inherited diseases, and be acquired through cancer chemotherapy or immunosuppressive therapy in transplant recipients. However, HIV infection is the most common cause of acquired immune deficiency. The symptom complex associated with acquired deficiency of the cellular immune system was called 'AIDS' when people realized they were looking at an epidemic of acquired immunodeficiency for which an explanation was lacking. It was soon apparent that the syndrome was frequent in groups with certain behavioural characteristics, such as homosexuals or injecting drug users, and certain geographical groups. The missing link that explained why some people in these groups developed AIDS, and others with the same behavioral or ethnic backgrounds did not, was found in 1983-84, when HIV was discovered. In cohort studies of such groups, the presence of HIV infection predicted overwhelmingly who would develop AIDS.

HIV infection typically follows the following course: a) primary acute infection with a characteristic clinical picture; b) prolonged period without obvious, visible symptoms - although laboratory studies can demonstrate continuous disease progression and c) a severe immunodeficiency resulting in the development of secondary opportunistic infections and tumors that, in turn, represent the major causes of death in AIDS patients. The spectrum of opportunistic infections may differ in different geographical locations, depending on the prevalence of certain pathogens (parasites, fungi, bacteria and viruses) to which immunocompromised individuals may be exposed.

The evidence that HIV causes AIDS is overwhelming. Numerous laboratory, clinical research and epidemiological studies have shown, for example, that:

- There is significant correlation between the level of viral production and viral load and disease prognosis. The onset of AIDS is greatly delayed in individuals who have low levels of viral replication, while patients with high amounts of the virus in the blood and lymph nodes have a much worse prognosis.
- When HIV infection is treated successfully with highly active antiretroviral therapy, the immune systems recovers partly and the disease manifestations of HIV infection often disappear, even if the patient had already progressed to AIDS. What symptoms remain depends on how much irreversible damage was done to the immune system before therapy began.
- The clinical response to therapy can be monitored and predicted by measurement of the amount of HIV in blood and lymph nodes.

- The main risk factors for HIV transmission (unprotected heterosexual or homosexual intercourse; blood transfusions; and needle-sharing during injection-drug use) are not new, but never resulted in a massive increase of morbidity and mortality prior to the appearance of HIV.

AIDS and HIV infection are invariably linked in time, place and population groups.

Additional evidence that HIV causes AIDS comes from unfortunate accidental infections such as the one in which three laboratory workers who had no other risk factors developed AIDS after accidental exposure to a pure, molecularly cloned strain of HIV. In all three cases, HIV was isolated from the infected individual, sequenced and shown to be the infecting strain of the virus.

Myth Two: AIDS Can Occur Without HIV

The existence of immunodeficiency was documented long before the onset of the AIDS epidemic but was extremely rare in the absence of cancer chemotherapy. These immunodeficiencies have a very specific pathogenesis and specific clinical manifestations. Some very rare types of immunodeficiency occasionally present with the clinical symptoms of AIDS. However, surveys conducted in many countries have shown the number of these cases to be insignificant compared to the numbers of cases of HIV-induced immune deficiency.

Myth Three: Seropositivity to HIV Can be Widespread Without AIDS

Speculation that HIV does not cause AIDS has in part been fuelled by arguments that point to the existence of groups of individuals who have been HIV-positive for many years without progressing to AIDS.

The course of HIV infection and the development of AIDS vary significantly between different individuals indicating the presence of multiple factors which may influence the outcome of infection. In the most reliable cohort studies conducted in different regions of the world on HIV-infected individuals who do not receive antiretroviral therapy, AIDS symptoms develop on average approximately 8 to 10 years after initial HIV infection. About 5-10% of HIV-positive individuals develop AIDS symptoms very rapidly during the first years of infection and about the same proportion may be infected with HIV for 15 or more years without progressing to AIDS. It follows that the overwhelming majority of people with HIV infection will develop AIDS unless treated with antiretroviral therapy in a timely manner.

Myth Four: The Validity of AIDS Epidemiological Research is Questionable Because HIV Testing is Unreliable

Testing for the presence of infections often uses the detection of antibodies that the human body produces in response to the presence of a pathogen. These antibodies are specific to a given pathogen, similar to a security lock and its key. Diagnosis of infection using antibody testing is one of the best-established concepts in medicine. Examples include the diagnosis of viral hepatitis, rubella, and many other infectious diseases. Antibody testing for these diseases has never been questioned. HIV antibody tests exceed the performance of most

other infectious disease tests in both sensitivity and specificity. Recent HIV antibody tests have sensitivity and specificity in excess of 98% and are therefore extremely reliable.

Progress in testing methodology has also enabled detection of viral genetic material, antigens and the virus itself in body fluids and cells. While not widely used for routine testing due to high cost and requirements in laboratory equipment, these direct testing techniques have confirmed the validity of the antibody tests.

Due to under-diagnosis, under-reporting, and reporting delays, surveillance based on cases with clinical manifestations of the acquired immune deficiency syndrome is unreliable in most countries - especially those with weak health care systems. Thus, epidemiological data on the spread of HIV are most commonly based on the measurement of HIV levels in various populations. Such studies use the antibody tests described above and are performed according to internationally accepted procedures, including measures to ensure quality control.

Over the past decade many countries have built up surveillance systems that include well-selected populations, such as women attending ante-natal care, which allow for extrapolation to larger populations in the countries. More recently, population based studies in a series of countries have proven the reliability of such systems. WHO and UNAIDS assist countries in their efforts to compile reliable estimates on prevalence and trends of HIV. Estimates resulting from these efforts are based on the best available data in all countries. Studies that are based on small or questionable samples are excluded.

HIV Causes AIDS

The Durban Declaration, signed by 5,228 physicians and scientists from 84 countries, including over 125 from Canada, who are dedicated to the control of HIV/AIDS, affirms that HIV is the Cause of AIDS, and given that UNAIDS documentation states there is overwhelming evidence that HIV causes AIDS, supported by findings from numerous laboratory, clinical research and epidemiological studies**.**

The Durban Declaration

A Declaration by Scientists and Physicians Affirming HIV is the Cause of AIDS

"Seventeen years after the discovery of the human immunodeficiency virus (HIV), thousands of people from around the world are gathered in Durban, South Africa to attend the XIII International AIDS Conference. At the turn of the millennium, an estimated 34 million people worldwide are living with HIV or AIDS, 24 million of them in sub-Saharan Africa (1). Last year alone, 2.6 million people died of AIDS, the highest rate since the start of the epidemic. If current trends continue, Southern and South-East Asia, South America and regions of the former Soviet Union will also bear a heavy burden in the next two decades.

Like many other diseases, such as tuberculosis and malaria that cause illness and death in underprivileged and impoverished communities, AIDS spreads by infection. HIV-1, the retrovirus that is responsible for the AIDS pandemic, is closely related to a simian immunodeficiency virus (SIV) which infects chimpanzees. HIV-2, which is prevalent in West Africa and has spread to Europe and India, is almost indistinguishable from an SIV that infects sooty mangabey monkeys. Although HIV-1 and HIV-2 first arose as infections transmitted from animals to humans, or zoonoses (2), both are now spread among humans through sexual contact, from mother to infant and via contaminated blood.

An animal source for a new infection is not unique to HIV. The plague came from rodents. Influenza and the new Nipah virus in South-East Asia reached humans via pigs. Variant Creutzfeldt-Jakob disease in the United Kingdom came from 'mad cows'. Once HIV became established in humans, it soon followed human habits and movements. Like other viruses, HIV recognizes no social, political or geographic boundaries.

The evidence that AIDS is caused by HIV-1 or HIV-2 is clear-cut, exhaustive and unambiguous. This evidence meets the highest standards of science (3-7). The data fulfill exactly the same criteria as for other viral diseases, such as poliomyelitis, measles and smallpox:

- Patients with acquired immune deficiency syndrome, regardless of where they live, are infected with HIV (3-7).
- If not treated, most people with HIV infection show signs of AIDS within 5-10 years (6, 7). HIV infection is identified in blood by detecting antibodies, gene sequences or viral isolation. These tests are as reliable as any used for detecting other virus infections.
- Persons who received HIV-contaminated blood or blood products develop AIDS, whereas those who received untainted or screened blood do not (6).
- Most children who develop AIDS are born to HIV-infected mothers. The higher the viral load in the mother the greater the risk of the child becoming infected (8).
- In the laboratory HIV infects the exact type of white blood cell (CD4 lymphocytes) that becomes depleted in persons with AIDS (3-5).
- Drugs that block HIV replication in the test tube also reduce viral load and delay progression to AIDS. Where available, treatment has reduced AIDS mortality by more than 80% (9).
- Monkeys inoculated with cloned SIV DNA become infected and develop AIDS (10).

Further compelling data are available (4). HIV causes AIDS (5). It is unfortunate that a few vocal people continue to deny the evidence. This position will cost countless lives.

In different regions of the world HIV/AIDS shows altered patterns of spread and symptoms. In Africa, for example, HIV-infected persons are 11 times more likely to die within 5 years (7), and over 100 times more likely than uninfected persons to develop Kaposi's sarcoma, a cancer linked to yet another virus (11).

As with any other chronic infection, various co-factors play a role in determining the risk of disease. Persons who are malnourished, who already suffer other infections or who are older, tend to be more susceptible to the rapid development of AIDS following HIV infection. However, none of these factors weaken the scientific evidence that HIV is the sole cause of AIDS.

In this global emergency, prevention of HIV infection must be our greatest worldwide public health priority. The knowledge and tools to prevent infection exist. The sexual spread of HIV can be prevented by monogamy, abstinence or by using condoms. Blood transmission can be stopped by screening blood products and by not re-using needles. Mother-to-child transmission can be reduced by half or more by short courses of antiviral drugs (12,13).

Limited resources and the crushing burden of poverty in many parts of the world constitute formidable challenges to the control of HIV infection. People already infected can be helped by treatment with life-saving drugs, but high cost puts these treatments out of reach for most. It is crucial to develop new antiviral drugs that are easier to take, have fewer side effects and are much less expensive, so that millions more can benefit from them.

There are many ways to communicate the vital information about HIV/AIDS. What works best in one country may not be appropriate in another. But to tackle the disease, everyone must first understand that HIV is the enemy. Research, not myths, will lead to the development of more effective and cheaper treatments, and hopefully a vaccine. But for now, emphasis must be placed on preventing sexual transmission.

There is no end in sight to the AIDS pandemic. By working together, we have the power to reverse the tide of this epidemic. Science will one day triumph over AIDS, just as it did over smallpox. Curbing the spread of HIV will be the first step. Until then, reason, solidarity, political will and courage must be our partners."

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Signed by 5,228 physicians and scientists from 84 countries **who are dedicated to the control of HIV/AIDS.**

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