CACVO
Conseil des Africains et Caraïbéens sur le VIH/sida en Ontario

ACCHO
African and Caribbean Council on HIV/AIDS in Ontario

CanCURE
Together, we Can CURE HIV

RESPONDING TO QUESTIONS ON HIV CURE RESEARCH IN AFRICAN, CARIBBEAN AND BLACK COMMUNITIES

SETTING THE STAGE

The purpose of this fact sheet is to assist African, Caribbean and Black (ACB) communities, service providers who work with them and other stakeholders to demystify HIV cure and increase knowledge and awareness of the complexities of the search for a cure.

ACB communities are disproportionately impacted by HIV in Ontario. In 2013-2014, more than half the women newly diagnosed with HIV in Ontario and 21% of all new diagnoses were from ACB communities. However, Black people only make up about 4% of the provincial population.[1] Almost 37 million people have HIV globally, two-thirds of whom are in Sub-Saharan Africa and the Caribbean.[2]

Anti-retroviral treatment (ART) has made it possible for ACB PHAs to live much longer, but it does not cure HIV. This is mainly due to **HIV reservoirs**, areas in the blood or tissues (e.g. gut, brain) where the virus hides and treatment is ineffective. In addition, there are intersecting challenges to taking effective treatment over the course of a lifetime, including:

Indefinite Adherence – Medications must be taken on a daily basis to be the most effective in suppressing viral load. However, adhering to treatment 100% of the time indefinitely can be difficult and not always a possibility due to the realities of ACB PHAs' lives and issues across the social determinants of health.

ART Toxicity – ART can be toxic and can lead to adverse side effects and health conditions, particularly when taken over a long period of time.

Inflammation – Even when ART suppresses viral load, fighting a long-term infection like HIV results in the immune system being in an ongoing state of activation, or chronic inflammation.[3] This raises the risk of serious illnesses like cancer, neurocognitive disorders, heart disease and kidney disease.[4]

These challenges have led to HIV cure being identified as a top research priority amongst PHAs in ACB communities.[8] The Canadian government has also adopted HIV cure research as one of its funding priorities.[9]

Accessibility – Consistent and reliable access to treatment may not be possible due to their high costs, lack of adequate health insurance coverage, precarious immigration status and other barriers.

HIV-related stigma is an overarching issue that can undermine HIV prevention messages and negatively impact PHAs' choices around engaging in care, particularly related to beginning and adhering to treatment.[5]

Criminalization of HIV non-disclosure – Under current laws in Canada, PHAs have a legal duty to disclose their status to sexual partners unless they satisfy two conditions:

CONDOMS ARE USED

AND

THEY HAVE A LOW OR UNDETECTABLE VIRAL LOAD[6]

In a climate of criminalization, ACB PHAs must consider issues around disclosure in relation to challenges that can impact consistent access and adherence to treatment.[7]

WHAT IS HIV CURE RESEARCH?

HIV cure research refers to finding a medical strategy that would permanently eliminate HIV from a person's body or control the virus so it would be unable to replicate. This would mean that a person would no longer need to take ART. An HIV cure must be safe, accessible and scalable to allow delivery to all people with HIV globally.[10] **There is currently no cure for HIV**.

WHAT WOULD AN HIV CURE LOOK LIKE?

There are two types of potential cures for HIV:

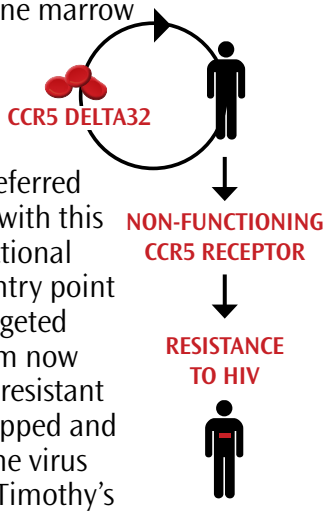
A sterilizing cure would completely eliminate HIV from the body. A person living with the virus would effectively become HIV-negative.

A functional cure also known as **HIV remission**, would limit the amount of HIV in the body and strengthen the immune system so that ART is not needed. This is a more likely approach to a scalable, accessible cure. 'Long-term' remission of HIV could be an initial step towards a permanent HIV cure.

HAS ANYONE BEEN 'CURED' FROM HIV?

Yes, one person. Known as the 'Berlin Patient', Timothy Brown is the only person ever to be 'cured' from HIV through medical intervention.[11] Brown underwent treatment for cancer of the blood and bone marrow.

He then received a donor bone marrow transplant giving him a new immune system. The donor cells contained a genetic mutation providing resistance to HIV infection, referred to as CCR5 delta32.[12] People with this mutation do not have a functional CCR5 receptor, which is an entry point HIV often uses to get into targeted cells. His new immune system now consisted of HIV target cells, resistant to HIV infection. ART was stopped and sensitive tests showed that the virus was no longer detectable in Timothy's body. He still remains HIV negative today. This case highlighted the significant role of CCR5 as a focus for a future **functional cure**.



While Brown was effectively cured from HIV, there is a high risk of death from such transplants. Also, the CCR5 delta32 mutation is a rare trait and not readily available for donation to others. This strategy cannot be delivered safely or easily to millions of people who do not have leukemia.

DOESN'T A CURE ALREADY EXIST?

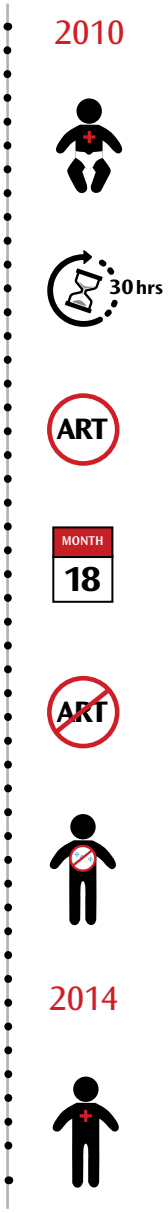
There are beliefs in the ACB community that a cure already exists. This is not true. While great progress has been made, there still remain challenges that researchers are working to address. The findings from the following case studies in addition to Timothy Brown can be considered small pieces to the larger 'puzzle' of finding a cure for HIV:

Mississippi Baby – 2010[13]

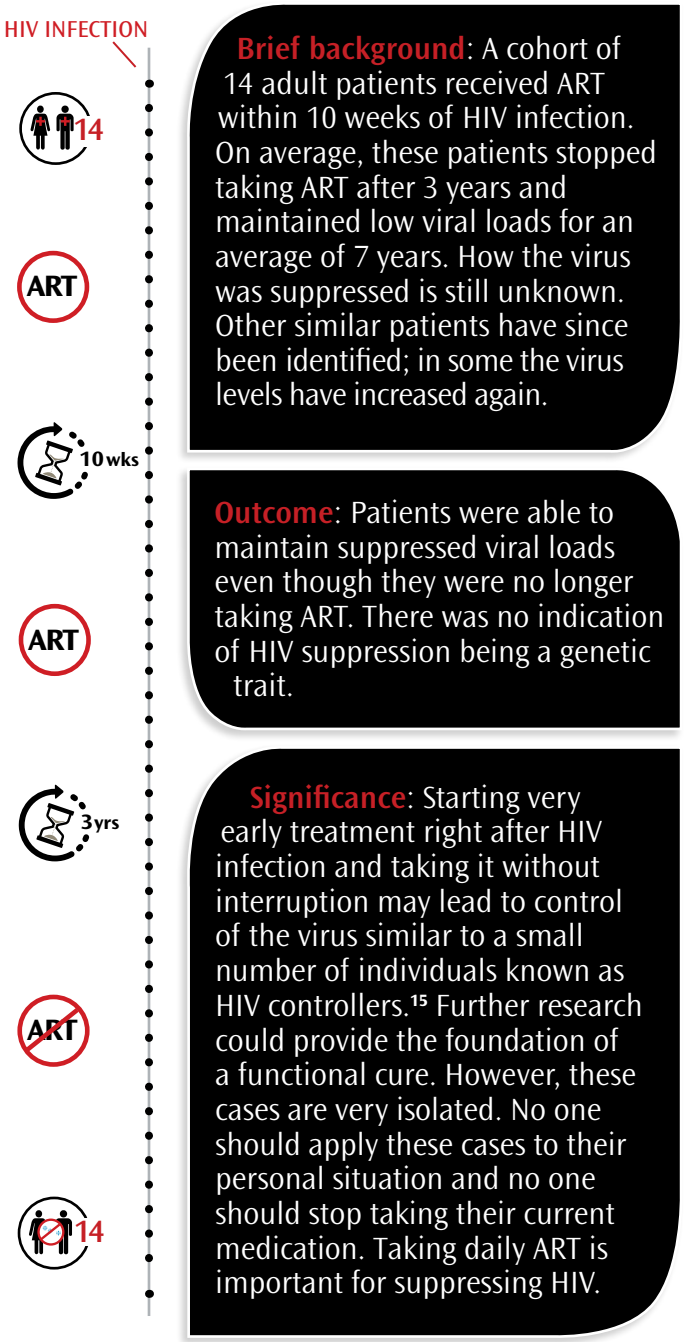
Brief background: An infant shown to have HIV at birth was put on ART within 30 hours after being born. At 18 months old, the child was lost to care and did not receive ART for the next 5 months. The child was expected to have detectable virus, yet the virus remained at undetectable levels without ART for a brief period.

Outcome: At the time it was thought that the Mississippi Baby was the only other person to be cured of HIV besides the Berlin Patient. However, in 2014 it was reported that HIV was again detected in the child after 27 months.

Significance: This case suggests that very early ART in infants may suppress HIV in the long-term. Starting treatment at birth may reduce the number of HIV reservoirs, slow their ability to establish themselves in the body and limit/delay rebound of the infection in the absence of treatment. If a functional HIV cure were developed, starting treatment as soon as possible could increase the effectiveness of the cure because the size of the HIV reservoir would be small and less complex. But this idea has not yet been proven.



VISCONTI Study – 2012[14]



Brief background: A cohort of 14 adult patients received ART within 10 weeks of HIV infection. On average, these patients stopped taking ART after 3 years and maintained low viral loads for an average of 7 years. How the virus was suppressed is still unknown. Other similar patients have since been identified; in some the virus levels have increased again.

Outcome: Patients were able to maintain suppressed viral loads even though they were no longer taking ART. There was no indication of HIV suppression being a genetic trait.

Significance: Starting very early treatment right after HIV infection and taking it without interruption may lead to control of the virus similar to a small number of individuals known as HIV controllers.[15] Further research could provide the foundation of a functional cure. However, these cases are very isolated. No one should apply these cases to their personal situation and no one should stop taking their current medication. Taking daily ART is important for suppressing HIV.

The Larger Puzzle – The few isolated cases described here are not the only examples of cure knowledge. These cases were all unplanned, findings. Studies in the laboratory, in test animals, and in a few new preplanned human clinical trials are also adding to our knowledge of how to eliminate or control HIV hiding in reservoirs.

WHEN WILL WE HAVE A CURE?

It is important to know that a cure that is safe, accessible and scalable is not around the corner. It is likely many years away. However, some ongoing studies to treat HIV now are also giving us clues. For example, the study of vaccine strategies which explores the use of antibodies to stimulate immunity to HIV instead of chemical drugs such as ART, is slowly merging with the study for a cure.

WHAT ARE CHALLENGES TO FINDING A CURE?

Understanding the HIV reservoir and the human immune responses capable of controlling or eliminating them is key to finding an HIV cure. The American Foundation for AIDS Research (amFAR) has outlined a 'roadmap' addressing four scientific roadblocks to finding a cure:

- **C** Chart the precise locations of viral reservoirs that persist in the body;
- **U** Understand how HIV persists in the reservoirs;
- **R** Record how much virus they hold; and
- **E** Eliminate the virus.[16]

WHAT RESEARCH IS BEING DONE IN CANADA?

Canada is playing an integral role in finding an HIV cure. The *Canadian HIV Cure Enterprise* (CanCURE)[17] is a collaborative of research investigators focused on studying HIV persistence and developing strategies towards a functional and ultimately, a sterilizing HIV cure. CanCURE is comprised of university-affiliated research centres across the country.

CanCURE research aligns with *Towards an HIV Cure*,[18] an initiative of the International AIDS Society (IAS) to provide leadership in facilitating more concerted efforts to accelerate global scientific research towards a cure for HIV and in advocating for increased investment in HIV cure research. Canada is represented on the International Scientific Working Group tasked with developing the Global Scientific Strategy: Towards an HIV Cure.

The Early Pediatric Initiation - Canada Child Cure Cohort (EPIC[4]) is a pediatric Canadian research study designed to better understand if HIV remission is possible following the early initiation of ART in children perinatally infected with HIV at the time of birth.[19]

HOW IS THE ACB COMMUNITY ENGAGING IN HIV CURE RESEARCH?

The CanCURE Community Advisory Board (which includes an ACCHO representative) is a diverse group of representatives of populations greatly impacted by HIV, including ACB people and PHAs. The purpose of the Board is to inform the internal review and decision making process throughout the duration of the CanCURE program.

CanCURE has also partnered with the *African and Caribbean Council on HIV/AIDS in Ontario (ACCHO)* and *Women's Health in Women's Hands Community Health Centre (WHIWH)* to meaningfully engage ACB PHAs and service providers in dialogue on the impacts of cure research and a future cure on PHAs' lives.

For more information on HIV/AIDS and cure research, please go to:

accho.ca
iasociety.org/hivcure
cancurehiv.org
epic4.ca

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