Canadian Man Appears to be Cured of HIV

If he remains in remission, the Toronto Patient will be the 11th person cured after a stem cell transplant to treat cancer.

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A Canadian man appears to be free of HIV after a stem cell transplant using cells from an HIV-resistant donor, researchers reported this week at the Canadian Association of HIV Research Conference in Winnipeg.

While stem cell transplants are too risky for HIV-positive people without advanced cancer, each new case offers clues that could help scientists develop an accessible functional cure, or long-term remission without antiretroviral treatment.

“The small but growing number of these cases prove an HIV cure is possible,” presenter Sharon Walmsley, MD, director of the HIV clinic at the University of Toronto’s University Health Network (UHN), said in a news release. “Cases such as these provide important information for researchers to find ways to eradicate HIV from the body.”

The Toronto Patient

Dubbed the Toronto Patient, the anonymous 62-year-old man has been under Walmsley’s care since 1999, when he was diagnosed with Stage IV Burkitt lymphoma, an opportunistic malignancy that prompted an HIV test. His CD4 T-cell count was 188, indicating an AIDS diagnosis.

Strong chemotherapy put the man’s cancer in remission, and he achieved viral suppression in 2000 after starting combination antiretroviral therapy; by 2015, his CD4 count had reached 500. But although antiretrovirals can keep HIV suppressed indefinitely, the virus inserts its genetic blueprints into host cells and establishes a long-lasting reservoir that is nearly impossible to eradicate.

Two decades later, the man developed myelodysplastic syndrome—a possible consequence of his prior cancer treatment—which progressed to acute myelogenous leukemia in late 2020. He was treated again with chemotherapy, but his care was complicated by bacterial sepsis and invasive fungal pneumonia.

In November 2021, after a reduced-intensity conditioning regimen to kill malignant cells and make room for new ones, the man underwent an allogeneic hematopoietic stem cell transplant. His doctors searched a global registry to find a matched donor with two copies of a mutation known as CCR5-delta32, which disables a receptor HIV uses to enter cells.

Despite preventive immune-suppressing medications, the man developed graft-versus-host disease, which occurs when donor immune cells attack the recipient. His recovery was further complicated by febrile neutropenia (low white blood cells with fever), acute kidney injury, various infections and a broken hip, but the transplant put his leukemia in remission.

The man stopped antiretroviral treatment in July 2025 and remains in sustained remission 10 months later, with an undetectable viral load according to highly sensitive tests. During the five years since the transplant, Mario Ostrowski, MD, of St. Michael's Hospital, and colleagues have seen a continual decline in HIV DNA in the man's blood cells—an indicator of the viral reservoir—and have been unable to isolate viable virus from his CD4 cells. What's more, he has undetectable HIV-specific T-cell responses, suggesting there may be no remaining virus to trigger the immune system.

In short, the Toronto Patient appears to be in long-term remission with no detectable HIV despite being in poor health with several complications. Follow-up is ongoing; in general, people are considered cured once they have been in remission without antiretrovirals for about two years.

Prior Stem Cell Cures

The first person cured of HIV—Timothy Ray Brown, the original Berlin Patient—received two transplants to treat acute myeloid leukemia from a donor with two copies of the CCR5-delta32 mutation. As first reported in 2008, he stopped antiretroviral treatment, but his viral load did not rebound. Over the years, scientists tested his blood, gut and other tissues, finding no evidence of intact HIV. At the time of his death in September 2020, Brown had been free of HIV for more than 13 years.

Six other people have also been cured after receiving stem cell transplants from donors with the double CCR5-delta32 mutation: Adam Castillejo (the London Patient), Marc Franke (the Düsseldorf Patient), Paul Edmonds (the City of Hope Patient), a woman in Marseille (the French Patient), the Chicago Patient and the Oslo Patient. (The Oslo case, first presented at last year's Conference on Retroviruses and Opportunistic Infections, was recently published in Nature Microbiology.) All remain off antiretrovirals without viral rebound.

Scientists initially assumed Brown's cure was attributable to the double mutation. But in 2022, researchers described the New York Patient, a woman with leukemia who received a combination of umbilical cord blood cells with the CCR5-delta32 mutation and partially matched adult stem cells without the mutation. The next Berlin Patient has a single copy of the mutation himself and received a transplant from a donor who also has one copy. And Romuald, the Geneva Patient, was cured after a transplant using wild-type stem cells with no copies of the mutation.

Researchers are still trying to figure out why these people were cured with stem cell transplants while other attempts have failed, and there does not seem to be a single decisive factor common to all the cases. Some received intensive pretransplant conditioning with chemotherapy and, in some cases, radiation, while others received gentler regimens. They had varying severity of graft-versus-host disease, which might help clear residual HIV. The Geneva Patient used an immune-modulating drug (ruxolitinib) that may help shrink the viral reservoir.

“It’s not all about CCR5-delta-32,” cure expert Sharon Lewin, MD, PhD, of the University of Melbourne said at a previous media briefing about the Next Berlin Patient. It’s likely that “multiple factors play a role in remission,” and these may differ from patient to patient.

Stem cell transplantation is an arduous and expensive procedure that is not safe for people without life-threatening cancer. But each successful case provides further information that could help researchers find more widely applicable functional cure approaches.

“Transplant provides clues to develop similar, less toxic and less expensive therapies by studying these individuals,” Ostrowski said in a UNH news release.

Added Tommy Alfaro Moya, MD, of UHN’s Princess Margaret Cancer Centre, who was involved in the Toronto Patient’s posttransplant care, “This case offers critical insight into how HIV can be eliminated from the body, informing safer approaches in the future.”

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