



# Update

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## **NIAID SCIENTISTS REPORT NEW RESULTS USING BONE MARROW AND AZT IN PATIENTS INFECTED WITH AIDS VIRUS**

Scientists of the National Institute of Allergy and Infectious Diseases (NIAID) have reported new results of studies using bone marrow transplants to reconstitute the immune system of patients infected with human immunodeficiency virus (HIV), the virus that causes AIDS.

Dr. H. Clifford Lane, NIAID, reporting at the Third International Conference on AIDS in Washington, D. C., presented data on 10 patients given lymphocytes and bone marrow transplants from their healthy twin brothers, following a course of treatment with the antiviral drug AZT.

Dr. Lane is a senior investigator in the Laboratory of Immunoregulation, of which Dr. Anthony S. Fauci, Director of NIAID, is chief. At last year's International Conference on AIDS in Paris, Dr. Fauci reported the first case of a patient with AIDS whose immune system was measurably improved after treatment with suramin and lymphocyte transfer and bone marrow from his healthy twin.

"Although the effects were transient, probably due to the persistence of HIV infection," Dr. Lane said, "we felt that additional studies were warranted, especially because we now have more promising agents with anti-HIV activity."

For the current study, Dr. Lane has selected patients who have positive viral cultures for HIV, with or without clinical illness, have demonstrated immunologic defects characteristic of HIV infection, and have an identical twin with a normal immunologic profile and no evidence of HIV infection.

The immune defect in AIDS is characterized by a decrease in the number and function of T4, or helper/inducer T lymphocytes, key cells

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in the body's healthy immune system. Patients infected with AIDS also develop an inability to respond to specific protein antigens, substances that in healthy individuals provoke the body to produce antibodies.

Dr. Lane treated the patients with AZT for 12 weeks prior to bone marrow transplantation. At weeks 10 and 12 they received infusions of lymphocytes from their twins. Following transplantation, patients were randomized to receive either AZT in a lower dose than the initial treatment or placebo.

Clinical responses to this treatment were closely linked with the immune status of the patients at the beginning of the study. Three of the 5 patients with less than 200 T4 cells per cubic millimeter in peripheral blood have shown progressive disease, while all 5 patients with greater than 200 T4 cells have been stable.

Transfer of immune function was shown by development of skin test reactivity to an experimental antigen (keyhole-limpet hemocyanin, a harmless animal protein) given to the healthy twins and transferred to the patients in the lymphocytes and bone marrow. No significant changes have been seen in the ability to culture HIV from the patients' blood.

"The data generated by the study over the next 3 to 6 months should be of value in assessing the value of combination therapy employing AZT and bone marrow transplantation in treating HIV infection," Dr. Lane concluded.

Co-authors of the study include Dr. Henry Masur, Dr. Joseph Kovacs, Mr. Ronald Steis, Ms. Margaret McGill, and Dr. Anthony S. Fauci.

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## NEW TESTS FOR SCREENING ANTIBODIES TO AIDS VIRUS GIVE FAST, ACCURATE RESULTS, SAY NIAID SCIENTISTS

Successful results have been obtained using two new rapid and simple tests for screening blood for antibodies to the virus that causes AIDS, according to scientists at the National Institute of Allergy and Infectious Diseases (NIAID) reporting to the Third International AIDS Conference in Washington, D. C.

Dr. Thomas C. Quinn evaluated a rapid latex agglutination assay in 2800 blood donors and clinical patients from diverse geographic areas. This assay, he said, "will allow for the immediate implementation of blood bank screening in developing areas of the world where standard testing procedures are impractical or not available."

Dr. Quinn pointed out that the test was consistently very sensitive and specific, regardless of the patients' clinical status or geographic origin. He also emphasized that the latex agglutination assay is simple to learn, takes only two minutes to perform, and is stable at room temperature.

Detection of antibody to specific proteins of human immunodeficiency virus (HIV), which causes AIDS, is now the standard method for identifying infected individuals, and for screening blood donated for transfusions. Routine use of the enzyme-linked immunosorbent assay (ELISA), confirmed by the Western blot test, has made transmission of AIDS by blood transfusion a rare event in countries where screening programs have been initiated.

In most developing countries, however, where high rates of HIV infection have been documented in blood donors, transfusions are a major mode of HIV transmission. At present, screening of blood donated for transfusions is not feasible in many countries, due to prohibitive costs, lack of blood banking facilities and equipment such as refrigerators and automated ELISA readers, and lack of trained technicians. Scientists agree that simpler, less expensive, rapid and highly sensitive tests for detection of antibody to HIV are urgently needed in the developing world.

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The latex agglutination assay employed by Dr. Quinn, which uses recombinant envelope protein of HIV for detecting HIV antibodies, was used to test blood from patients known to be infected with HIV and persons who were potential blood donors. Results were comparable to those obtained by repeat ELISA and Western blot tests, and compared to a single ELISA, the assay was found to be more specific (i.e., more accurate for detection of HIV infection).

Dr. Quinn and his colleagues carried out the study at Project SIDA, a large, cooperative AIDS study in Kinshasa, Zaire, and at Johns Hopkins University, Baltimore.

Dr. Henry Francis, an NIAID investigator with Project SIDA, reported a separate study in which he and other researchers tested the efficacy of a dot linked immunoassay for detecting HIV antibodies in a group of 501 outpatients in Kinshasa. Forty-four percent of the test group were antibody-positive by ELISA and Western blot.

Dr. Francis said that the dot assay, which was shown to have a high degree of sensitivity and specificity, has several advantages over currently used commercial assays: it costs approximately 20 cents (compared to the \$2 to \$4 for ELISA kits); it takes only 45 minutes per assay (compared to 4 hours for an ELISA and 2 to 4 days for a Western blot), it is simple to use, and it can be stored at room temperature for at least one month without loss of accuracy. Furthermore, because the test involves a color change that appears on a plastic card, the investigator has a permanent record of the test.

"The reliability, accuracy and ease of use of the dot test, and its low cost," Dr. Francis said, "will allow its widespread use in many African countries."

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