Antiretroviral therapy has tripled the proportion of adults achieving undetectable levels of HIV

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Over the past decade in western Europe there has been a dramatic improvement in the ability of antiretroviral therapy to keep HIV under control in adults with virological failure to drugs from all three of the original antiretroviral classes, and an accompanying decrease in the rates of AIDS, according to a study published Online First in *The Lancet Infectious Diseases*. The authors claim that this effect is probably the result of several new drugs being introduced over the same period that are more tolerable, easier to use, and active against virus resistant to typical first-line and second-line drugs.

Since 1998, all patients have been recommended to start antiretroviral therapy (ART) with three or more drugs from two or more different classes in order to significantly reduce viral load (the amount of virus in the blood) and to suppress HIV replication and the development of drug resistance. However, until recently, limited treatment options were available for individuals who developed resistance to drugs from each of the three original classes, known as triple-class virological failure (TCVF).

To assess whether there has been an improvement in outcomes for people with TCVF over the past decade, the Pursuing Later Treatment Option II (PLATO II) project investigators analysed data from the COHERE database (a collaboration of 33 observational studies of HIV in Europe). The analysis included 91 764 adults, of whom 2476

experienced TCVF.

Modelling was used to assess trends in virological suppression (a viral load under 500 copies per mL) after controlling for factors that could affect the likelihood of virological response including sex, mode of transmission, age, presence of AIDS, and CD4 count. The incidence of AIDS or death after TCVF was also calculated.

Almost one in five patients achieved undetectable levels of HIV (a viral load under 50 copies per mL) after TCVF in 2000 and this increased substantially to nearly three in five patients in 2009. The authors note that the trend for improved virological outcome was strongest in 2008 and 2009, soon after four new drugs were approved in Europe.

The incidence of any AIDS event declined from 7.7 per 100 person-years between 2000 and 2002 to 2.3 in 2008 and 1.2 in 2009.

The authors say: "Whether the improving trend, or even the current rate of viral suppression in 2009, can be sustained in the future is unclear. Continued improvement will likely need continued development of new drugs, which are active against virus with resistance to existing drugs."

In a Comment, Jens Lundgren from Copenhagen University Hospital and Jeff Lazarus from Copenhagen University, Copenhagen, Denmark caution: "The results presented by the PLATO II collaboration should not lead to complacency. The number of people with resistant HIV infection will increase as the number of people receiving ART increases…Of particular worry is that the pace of clinical programmes of HIV-drug development has slowed down in the past couple of years."

They also stress the need for access to alternative, less toxic, and more affordable drugs in sub-Saharan Africa and Eastern Europe: "As access to ART is scaled up, a sizeable proportion of people living with HIV in

these regions will live for extended periods on virologically failing ART. This scenario allows for renewed progression of their HIV condition and the transmission of resistant HIV to others. Recognition of the problem and innovation to addressing it are vital to the response."

More information: Paper online: www.thelancet.com/journals/lan … (11)70248-1/abstract

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