AIDS briefs

A single dose of tenofovir and emtricitabine can reduce resistance

A single dose of tenofovir and emtricitabine at delivery reduced resistance to non-nucleoside reverse transcriptase inhibitors at 6 weeks after delivery by half.

Intrapartum and neonatal single-dose nevirapine are commonly used and essential in the prevention of mother-to-child transmission of HIV in resource-poor settings, but may induce resistance to other non-nucleoside reverse transcriptase inhibitors.

The aim of this study carried out by Benjamin Chi and colleagues in Lusaka, Zambia, was to see if this complication could be reduced by the introduction of a single peripartum dose of tenofovir and emtricitabine.

They randomly assigned 400 pregnant women who came to two public sector primary health care clinics in Lusaka. They assigned 200 of the women to receive a single oral dose of 300 mg tenofovir with 200 mg emtricitabine under direct observation, and 199 to receive no study drug. Short-course zidovudine and intrapartum nevirapine were offered to all HIV-infected women, according to the local standard of care. Those women who were eligible to receive antiretroviral therapy according to local national guidelines were not enrolled in the study.

Women given the intervention were 53% less likely than controls to have a mutation that conferred resistance to non-nucleoside reverse transcriptase inhibitors at 6 weeks after delivery.

The authors recommend that this treatment should be offered as an adjuvant to intrapartum nevirapine.

Chi B, *et al. Lancet* 2007; early online publication. DOI:10.1016/S0140-6736(07)61605-5

Cystatin C levels indicative of kidney function in HIV patients

Levels of cystatin C indicate that kidney function is compromised in people living with HIV, according to a study published in the *Archives of Internal Medicine* recently.

In an American study of body fat and metabolic changes in HIV-positive patients, researchers compared kidney function, measured by cystatin C and creatinine levels in 1 008 of the study patients and 208 HIV-negative controls.

They found that levels of cystatin C were raised in HIV patients compared with the HIV-negative controls. However, creatinine levels were similar in the two groups. Poor kidney and cardiovascular health was associated with cystatin C levels of more than 1.0 mg/ml. The investigators found that HIV-positive patients were significantly more likely to have cystatin C levels above this threshold than the controls.

Factors associated with higher cystatin C levels in HIV-positive patients included high blood pressure, low HDL cholesterol, a lower CD4 cell count and co-infection with hepatitis C virus.

The authors conclude: 'HIV infection appears to be associated with substantially worse kidney function when measured by cystatin C level, whereas creatinine levels… were similar in HIV-infected individuals and controls.' They call for further studies to establish 'the optimal role of cystatin C for detecting reduced kidney function in HIV or chronic infection.'

Odden MC, *et al. Arch Intern Med* 2007; 167: 2213-2219.

Moderate HIV viral load the most infectious

In what appears to be a paradox, research has shown that HIV may have evolved so that the average viral load set-point – around 33 000 copies/ml – seen in most untreated people during chronic infection is finely balanced between being optimal for HIV transmission and optimal for host survival according to a study published online recently in *Proceedings of the National Academy of Sciences.*

This finding could have implications for HIV prevention, particularly the idea of an 'imperfect vaccine', that is, one that will lower viral load and so allow an infected person to live longer, rather than totally preventing infection. Given the results of the study the authors warned against other 'imperfect' prevention methods – including immunotherapy and microbicides.

The main aim of this study was to quantify the relationship between viral load and transmission of the virus. Researchers re-examined data from a study on homosexually infected men in Amsterdam and data on viral load and transmission in heterosexual men and women in Zambia. The data from the Amsterdam study suggested that an untreated individual with an average viral load of 1 000 copies/ml would have 15.6 years of symptom-free life. As the viral load increased, the length of asymptomatic HIV infection reduced: 9.7 years for 10 000 copies/ml, 4.9 years for 100 000 copies/ml, and 2.1 years for a million copies/ml.

Data from Zambia showed annualised transmission rates of 0.02 per year for someone with a set-point viral load of 1 000 copies/ml, to 0.132 per year for 10 000 copies/ml, 0.279 per year for 100 000 copies/ml, and 0.313 per year for one million copies/ml.

Researchers found that the periods of highest viral load (during primary infection and during late-stage HIV disease) did not actually have the highest transmission potential: 0.67 (infections per person per lifespan) for primary infection and 0.50 for late-stage HIV disease.

In fact, the viral load with the highest transmission potential (of close to 1.5 infections per person per lifespan) was found to be during chronic infection: 33 113 copies/ml. This, the investigators point out, is very close to the average viral load set-point seen in both the Dutch (22 908) and Zambian (54 954) cohorts.

Fraser C, *et al. Proc Natl Acad Sci* 2007. epub October 22.

BRIDGET FARHAM