

## **Evaluation of impact of long-lasting insecticide-treated bed nets and point-of-use water filters on HIV-1 disease progression in Kenya.**

Walson JL1, Sangaré LR, Singa BO, Naulikha JM, Piper BK, Yuhas K, Onchiri FM, Otieno PA, Mermin J, Zeh C, Richardson BA and John-Stewart G.

2013 Jun 1;27(9):1493-501. doi: 10.1097/QAD.0b013e32835ecba9.

### **Abstract**

#### **OBJECTIVES:**

Among HIV-1-infected individuals in Africa, coinfection with malaria and diarrhoeal disease may be associated with more rapid HIV-1 disease progression. We sought to determine whether the use of long-lasting insecticide-treated bed nets and simple point-of-use water filters can delay HIV-1 disease progression.

#### **DESIGN:**

A prospective cohort study.

#### **SETTING:**

Two HIV care sites in Kenya.

#### **PARTICIPANTS:**

HIV-1-infected adults not yet meeting criteria for antiretroviral therapy.

#### **INTERVENTIONS:**

One group received the standard of care, whereas the other received long-lasting insecticide-treated bed nets and water filters. Individuals were followed for up to 24 months.

#### **MAIN OUTCOME MEASURES:**

The primary outcome measures were time to CD4 cell count less than 350 cells/ $\mu$ l and a composite endpoint of time to CD4 cell count less than 350 cells/ $\mu$ l and nontraumatic death. Time to disease progression was compared using Cox proportional hazards regression.

#### **RESULTS:**

Of 589 individuals included, 361 received the intervention and 228 served as controls. Median baseline CD4 cell counts were similar ( $P=0.36$ ). After controlling for baseline CD4 cell count, individuals receiving the intervention were 27% less likely to reach the endpoint of a CD4 cell count less than 350 cells/ $\mu$ l (hazard ratio 0.73; 95% confidence interval 0.57-0.95). CD4 cell count decline was also significantly less in the intervention group (-54 vs. -70 cells/ $\mu$ l per year,  $P=0.03$ ). In addition, the incidence of malaria and diarrhoea were significantly lower in the intervention group.

#### **CONCLUSION:**

Provision of a long-lasting insecticide-treated bed net and water filter was associated with a delay in CD4 cell count decline and may be a simple, practical and cost-effective strategy to delay HIV-1 progression in many resource-limited settings.