Background HIV infection is a major risk factor for pneumococcal disease in industrialised countries. Although both are common infections in sub-Saharan Africa, few studies have investigated the importance of this interaction. We have followed up a cohort of female sex-workers in Nairobi and report here on the extent of invasive pneumococcal disease. Methods A well-established cohort of low-class female sex-workers, based around a community clinic, was followed up from October, 1989, to September, 1992. 587 participants were HIV positive and 132 remained HIV negative. Set protocols were used to investigate common presentations. Cases were identified clinically and radiographically. Streptococcus pneumoniae and other pathogens were diagnosed by culture. Findings Seventy-nine episodes of invasive pneumococcal disease were seen in the 587 HIV-positive women compared with one episode in the 132 seronegative women (relative risk 17·8, 95% Cl 2·5 to 126·5). In seropositive women the incidence rate was 42·5 per 1000 person-years and the recurrence rate was 264 per 1000 person-years. By serotyping, most recurrent events were re-infection. A wide spectrum of HIV-related pneumococcal disease was seen: only 56% of cases were pneumonia; sinusitis was seen in 30% of cases, and occult bacteraemia, a novel adult presentation, in 11%. Despite forty-two bacteraemic episodes, no deaths were attributable to Strep pneumoniae. At first presentation the mean CD4 cell count was 302/εL (SD 191) and was 171/εL (105) for recurrent episodes. During acute Strep pneumoniae infection the CD4 cell count was reversibly suppressed (mean fall in sixteen episodes, 105/εL [123]). The neutrophil response to acute infection was blunted and was correlated with CD4 count (r=0·50, 95% Cl 0·29 to 0·66). Strep pneumoniae caused more disease, at an earlier stage of HIV immunosuppression, than Mycobacterium tuberculosis or non-typhi salmonellae. Interpretation Our study highlights the importance of the pneumococcus as an early but readily treatable complication of HIV infection in sub-Saharan Africa.