

A MODEL of the spread of AIDS in Africa is relying on data on infection with HIV, sparse though they are, rather than reported cases of AIDS. The model suggests that there may be 10 times as many cases of AIDS in Africa than reported by many nations (see p 20).

The model has been developed by scientists from the World Health Organization. James Chin, of the WHO, told the conference that out of 111 000 cases of AIDS reported to the WHO to date by 140 countries, only just over 14 000 are from Africa. "Only a minority of the cases that have occurred to date [in Africa] have been reported," he said.

Methods of forecasting that rely on extrapolation from the reported cases of the disease are not useful in developing countries which do not have reliable reporting. Chin, together with Steve Lwanga, also from the WHO, decided to develop an alternative method.

The first step is to estimate when HIV began to spread extensively in the population. If no data are available, Chin said,

1980 should be the starting point. The second stage is to estimate the prevalence of the virus in the country at a specific time—for example, in the current year. The accuracy of the predictions from the model are quite sensitive to this figure, Chin said.

People found to be infected in one year will not all have caught their infection in that year. The model allows for this, and calculates the expected number of cases of AIDS using data which suggest that 15 to 20 per cent of people develop AIDS within five years of infection, 50 per cent within 10 years and 75 per cent within 15 years.

Finally, the model needs an estimate of what the continuing incidence of HIV infection might be. This figure is difficult to estimate, Chin said, but it will not greatly influence the predicted number of cases of AIDS within the next four to five years because most of these will come from the pool of people already infected with HIV.

Lwanga and Chin found that their model's predictions of the number of cases of AIDS in the US and Europe agreed well with projections from other methods. They

then used the model to examine what the situation might be in a hypothetical East African country with a population of 16.1 million. They gave the country a typical population structure with 15 per cent living in urban areas.

The next stage was to fit data on the prevalence of HIV infection in different groups to the population. Surveys have shown that in 1986, in some urban areas, up to a quarter of the most sexually active age groups (20 to 40 years old) were HIV-positive. A tenth of children under five years of age are also HIV-positive due to transmission from infected mothers. Few children aged five to 14 years are infected.

Overall, 12 per cent of the hypothetical urban population are infected, and fewer than 1 per cent of the rural population. Throughout the country, the overall infection rate would be 2.6 per cent. Overall, there would be about 416 000 HIV-positive people in the hypothetical population in 1986. Some of the predictions obtained by applying these figures to the model are given on p 20. □