Country-specific estimates and models of HIV and AIDS: methods and limitations.

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ABSTRACT:
OBJECTIVE: This paper presents the methods used to calculate the end of 1997 country-specific estimates of HIV and AIDS produced by the UNAIDS/WHO Working Group on Global HIV/AIDS and STD Surveillance. The objective of this exercise was to improve estimates on HIV/AIDS by using country-specific models of HIV/AIDS epidemics. The paper describes and discusses the processes and obstacles that were encountered in this multi-partner collaboration including national and international experts.

METHODS: The 1997 estimates required two basic steps. First, point prevalence estimates for 1994 and 1997 were carried out and the starting year of the epidemic was determined for each country. The procedures used to calculate the estimates of prevalence differed according to the assumed type of the epidemic and the available data. The second step involved using these estimates of prevalence over time and the starting date of the epidemic to determine the epidemic curve that best described the spread of HIV in each particular country. A simple epidemiological program (EPIMODEL) was used for the calculation of estimates on incidence and mortality from this epidemic curve.

RESULTS: Regional models that were used in previous estimation exercises were not able to capture the diversity of HIV epidemics between countries and regions. The result of this first country-specific estimation process yielded higher estimates of HIV infection than previously thought likely, with over 30 million people estimated to be living with HIV/AIDS. The application of survival times that are specific to countries and regions also resulted in higher estimates of mortality, which more accurately describe the impact of the epidemics. At the end of 1997, it was estimated that 11.7 million people worldwide had died as a result of HIV/AIDS since the beginning of the epidemic.

CONCLUSION: This exercise is an important step in improving understanding of the spread of HIV in different parts of the world. There are, however, shortcomings in the current systems of monitoring the epidemic. Improvements in HIV surveillance systems are needed in many parts of the world. In addition, further research is needed to understand fully the effects of the fertility reduction as a result of HIV, differing sex ratios in HIV infection and other factors influencing the course and measurement of the epidemic.