

setting, backcalculation would best be applied to subgroups and interpreted in light of external data specific to each group.

The analytical and diagnostic tools developed by the

authors, and their insights on components of overdispersion and model uncertainty, will be valuable in future studies of AIDS-incidence trends by backcalculation.

Comment

Victor De Gruttola and Marcello Pagano

The authors should be congratulated on presenting a timely and authoritative review of an important topic. The long latency period of AIDS makes it challenging to use surveillance databases for assessing epidemic trends. It also makes a technique such as backcalculation, which makes use of this information, another option for projecting the epidemic. Surveillance databases provide the only direct source of information about the impact of treatments and of educational interventions on entire populations. The analytical approaches presented in this paper may improve the usefulness of AIDS surveillance in designing and evaluating large-scale vaccine trials. In addition, these techniques could help us learn more about changes in the age distribution of HIV incidence over time. Currently we know little about the HIV infection rates among adolescents, who may be at particularly high

risk. This knowledge should be useful in planning and evaluating attempts at behavioral modification.

Detection of subtle features of the epidemics of HIV infection and AIDS depends on knowledge about the precision of estimates and projections. The authors have characterized the numerical instability of deconvolution processes and the sensitivity to changes in the parameters of the process. One issue that we believe deserves more attention, however, is the error introduced by assuming that the times of onset of AIDS are independent; this was deemed of secondary importance by the authors. The assumption is obviously incorrect; the number who develop AIDS today must affect the number who do so tomorrow. Based on our own work, we agree with the authors that, as in the linear least-squares problem, the impact of this error should not be felt in solving for the mean function or the projections; it will result in an overly optimistic estimated precision of the projections. It would be interesting to assess the impact of this assumption. The best way to do this might be to model a process with some dependencies built in (Pagano et al., 1992a), rather than perform simulations with the incorrect independence assumption built into the model.

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Comment

John M. Karon and Glen A. Satten

Two of the most important questions concerning the HIV epidemic in the United States are whether HIV

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incidence is falling or rising and how many persons are becoming infected each year. Because it is presently the only feasible method for estimating past HIV incidence, backcalculation is fundamental for our understanding of the epidemic. Backcalculation is also currently the best method for making AIDS case projections.