

owing to the spread of CD4 counters, earlier HIV diagnosis, and increasing availability of antiretrovirals.

It is soundly proven that starting highly active antiretroviral therapy at higher CD4 counts leads to improved outcomes. Use of CD4 counts to time treatment initiation leads to fewer opportunistic diseases, improved life expectancy, and reduced hospital costs. Phillips and colleagues' conclusion that "use of ARV therapy without monitoring of viral load or CD4 cell count does not have marked detrimental effects on patient survival" is short-sighted. As millions are poised to start antiretrovirals, avoiding investments in CD4 monitoring could lead to a late start, limited benefits, and early death.

I declare that I have no conflict of interest.

Eran Bendavid
ebd@stanford.edu

Division of Infectious Disease & Geographic Medicine, Center for Health Policy, Stanford University, Stanford, CA 94305, USA

- 1 Phillips A, Pillay D, Miners AH, Bennett DE, Gilks C, Lundgren JD. Outcomes from monitoring of patients on antiretroviral therapy in resource-limited settings with viral load, CD4 cell count, or clinical observation alone: a computer simulation model. *Lancet* 2008; **371**: 1443–51.
- 2 Egger M. Outcome of ART in resource-limited and industrialized countries. 14th Conference on Retroviruses and Opportunistic Infections; Los Angeles, CA, USA; Feb 25–28, 2007.

Authors' reply

Stephen Lawn and colleagues point out that viral load testing has other uses besides being used as a regular monitoring tool for deciding when to switch to second-line treatment. As well as possibly being a suitable basis for promoting adherence in some settings (although the effectiveness compared with other approaches is unproven), its measurement in pregnant women being assessed for mother-to-child transmission, and as a check on patients in whom treatment has failed according to immunological and clinical criteria, are likely to be of some benefit. We would hence re-emphasise our conclusion that development of cheap and robust versions of these

assays is important, but concern over their availability must not be allowed to inhibit the rollout of therapy.

Rochelle Walensky and colleagues express concern that we did not remove weakly dominated strategies. The reason for this was that we felt the approach was likely to be opaque to the non-technical reader, detracting from the overall message. Since it did not affect our overall conclusions, we took the view that by also presenting the expected values for life-years, quality-adjusted life-years, and costs for each strategy, readers were free to adjust the comparisons themselves, as Walensky and colleagues have indeed done.

These colleagues also suggest that our finding of minimal benefit of CD4 count monitoring over clinical monitoring is at odds with their published work.¹ In that work, they did not consider the effects of CD4 count monitoring to switch to second-line treatment in isolation from the use of CD4 counts to decide who should initiate antiretroviral therapy (ART). The benefits of CD4 count monitoring identified in their paper are likely to relate to the better health status of patients initiating therapy (ie, inclusion of asymptomatic patients with CD4 count <200 per μL), and any benefits or otherwise of using CD4 counts to decide on when to switch to second-line therapy cannot be assessed.

In a similar vein, we agree with Eran Bendavid that people who start antiretroviral therapy with low CD4 counts will experience poorer survival than those who start at higher CD4 counts, but this is not relevant to our comparison of strategies for monitoring patients on first-line ART. It is worth noting that our conclusions were not changed when considering a situation where patients were started on ART based on low CD4 count.

No author has any financial or personal relationships with people or organisations that could inappropriately influence this work, although ANP, DP, CFG, and JDL have, at some stage in the past, received funding from various pharmaceutical companies for research, travel grants, speaking engagements, or consultancy fees.

*Andrew N Phillips, Deenan Pillay, Alec Miners, Charles F Gilks, Jens D Lundgren, on behalf of the authors

a.phillips@pcps.ucl.ac.uk

HIV Epidemiology & Biostatistics Group, Department of Infection and Population Health, Royal Free & University College Medical School, University College London, London NW3 2PF, UK (ANP); Centre for Virology, Department of Infection, Royal Free & University College Medical School, University College London, London, UK (DP); Centre for Infections, Health Protection Agency, London, UK (DP); London School of Hygiene and Tropical Medicine, London, UK (AM); Department of HIV, World Health Organization, Geneva, Switzerland (CFG); and Section on Viral Diseases/KMA, Rigshospitalet and Faculty of Health Sciences, University of Copenhagen, Denmark (JDL)

- 1 Goldie SJ, Yazdanpanah Y, Losina E, et al. Cost-effectiveness of HIV treatment in resource-poor settings: the case of Cote d'Ivoire. *N Engl J Med* 2006; **355**: 1141–53.

Trends in HIV incidence in India from 2000 to 2007

India's HIV epidemic is of global interest. 2 years ago, we showed that HIV prevalence in young women declined by about a third between 2000 and 2004 in the southern states of Andhra Pradesh, Karnataka, Maharashtra, and Tamil Nadu.¹ HIV prevalence at young ages (15–24 years) is a useful proxy for trends in HIV incidence. We now present trends up to 2007.

Among 423 842 women aged 15–24 years tested nationally at antenatal clinics, prevalence declined by 54% (95% CI –45 to –63; $p < 0.0001$) between 2000 and 2007 in south India, and there was no significant change in north India (3%, –47 to 53; $p = 0.73$) where HIV is less prevalent (figure). Declines in south India were similar if we analysed individual age-groups, if we excluded Tamil Nadu, or restricted the analyses to each individual state or to the sites tested continuously for at least 4 years. Women who use antenatal clinics differ from those who do not in education, residence, and migration, but these demographic factors remained similar from year to year. More research is needed to understand

why incidence has fallen in south India. The most probable reason is reduced contacts with female sex work by the husbands of tested women or increased condom use in sex work.

Although useful for estimating trends in HIV incidence, data from antenatal clinics cannot estimate community prevalence reliably. The National Family Health Survey of 2005–06 (NFHS-3)² yielded lower HIV prevalence nationally in adults (0.28%, 95% CI 0.25–0.31 at ages 15–49 years) than seen among women at antenatal clinics in our study (0.60%, 0.57–0.63 at ages 15–49 years). A study in one district³ suggested that women with HIV were over-represented in public antenatal clinics, but we found that HIV infection was associated with lower use of public antenatal clinics within the NFHS-3. Among 8743 eligible women, survival analyses with Cox's regression of time since last antenatal clinic use yielded a hazard ratio for HIV of 0.44 (0.22–0.90; $p=0.02$), after adjustment for age and sampling unit.

The halving of new infections in south India and the lack of demonstrable increases in the north would, at first glance, seem to be consistent with India's downward revision of HIV prevalence in 2006 from 5.1 million to 2.5 million (range 2.0–3.1 million). However, the revised prevalence esti-

mates are based largely on "hybrid" analyses that combine antenatal clinic and NFHS-3 data, whereas earlier estimates were based on antenatal clinic data. The NFHS-3 has biases also, including the under-representation of high-risk groups.⁴

In conclusion, although the estimation of HIV trends is reasonably robust, we caution that prevalence estimates remain uncertain. Reliable estimation of prevalence requires combining various sources of data, including information on AIDS mortality.⁵

We declare that we have no conflict of interest.

Paul Arora, Rajesh Kumar,
Madhulekha Bhattacharya,
Nico J D Nagelkerke, *Prabhat Jha
prabhat.jha@utoronto.ca

Centre for Global Health Research, St Michael's Hospital, University of Toronto, Ontario M5B 2C5, Canada (PA, NJDN, PJ); School of Public Health, Post Graduate Institute of Medical Education and Research, Chandigarh, India (RK); National Institute of Health and Family Welfare, New Delhi, India (MB); and United Arab Emirates University, Al Ain, United Arab Emirates (NJDN)

- 1 Kumar R, Jha P, Arora P, et al. Trends in HIV-1 in young adults in south India from 2000 to 2004: a prevalence study. *Lancet* 2006; **367**: 1164–72.
- 2 International Institute for Population Sciences and Macro International. National Family Health Survey (NFHS-3), 2005–2006. India Volume I. Mumbai: IIPS, 2007.
- 3 Dandona L, Lakshmi V, Sudha T, Kumar GA, Dandona R. A population-based study of human immunodeficiency virus in south India reveals major differences from sentinel surveillance-based estimates. *BMC Med* 2006; **4**: 31.

- 4 Kumar R, Jha P, Arora P, Dhingra N, for the Indian Studies of HIV/AIDS Working Group. HIV-1 trends, risk factors and growth in India. In: National Commission on Macroeconomics and Health. Background papers: burden of disease in India. New Delhi: Ministry of Health and Family Welfare, 2005: 58–74. [https://www.who.int/macrohealth/action/NCMH_Burden%20of%20disease_\(29%20Sep%202005\).pdf](https://www.who.int/macrohealth/action/NCMH_Burden%20of%20disease_(29%20Sep%202005).pdf) (accessed June 24, 2008).
- 5 Jha P, Jacob B, Gajalakshmi V, et al, for the RGI-CGHR Investigators. A nationally representative case-control study of smoking and death in India. *N Engl J Med* 2008; **358**: 1137–47.

Modernising Medical Careers and accountability

Your May 17 Editorial (p 1638)¹ accuses the Postgraduate Medical Education and Training Board (PMETB) of "extraordinary self-delusion" in not accepting responsibility for the difficulties over the implementation of the Medical Training Application Service and the Modernising Medical Careers programme in 2007. Neither John Tooke's independent inquiry² nor the investigation by the Select Committee³ supports this view.

Put simply, PMETB is responsible for determining what young doctors learn, for ensuring that their assessments are fit for purpose, and that those responsible for training them do so properly. The order⁴ that established us does not give us the power to tell selection committees how to choose between eligible candidates, and nor should it.

Peter Rubin
peter.rubin@pmetb.org.uk

Chairman, Postgraduate Medical Education and Training Board (PMETB), London SE1 7DU, UK

- 1 The Lancet. MMC: "giving cholera to cure dysentery". *Lancet* 2008; **371**: 1638.
- 2 Tooke J. Aspiring to excellence: findings and final recommendations of the independent inquiry into Modernising Medical Careers. London: MMC Inquiry, 2008. <http://www.mmcinquiry.org.uk/draft.htm> (accessed July 2, 2008).
- 3 Select Committee on Health. Third report: Modernising Medical Careers. London: Stationery Office, 2008. <http://www.publications.parliament.uk/pa/cm200708/cmselect/cmhealth/25/2502.htm> (accessed July 2, 2008).

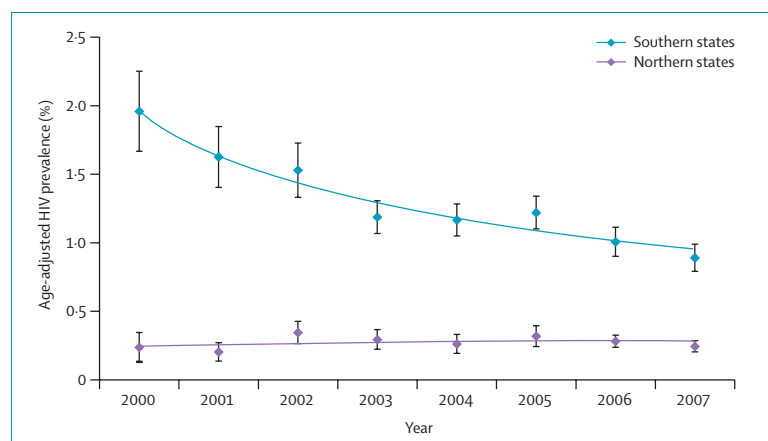


Figure: Age-adjusted HIV prevalence among antenatal attendees aged 15–24 years from 2000 to 2007 in high-prevalence southern states (Andhra Pradesh, Karnataka, Maharashtra, and Tamil Nadu) and northern states of India

Logarithmic trend line; test for trend by logistic regression, with age adjustment to the entire study population, $n=202\,254$ for south, $n=221\,588$ for north.