



TREAT ALL HIV-POSITIVE PEOPLE – AND BURY THE PANDEMIC IN 14 YEARS



The Caprisa-run HIV/AIDS/TB clinic in downtown Durban.

Picture: Chris Bateman

Initiate universal voluntary ART regardless of CD4 cell counts and within 10 years South Africa's HIV incidence and mortality will drop to less than 1 case per 1 000 people per year

and within 50 years prevalence will be reduced to below 1%.

With other prevention methods hardly impacting on the epidemic, the lowering of the amount of HIV in

infected people through ARV drugs is the most effective way of reducing new infections, five World Health Organization (WHO) researchers argue in a provocative article published in *The Lancet* last November.¹ According to their model, each untreated infected person infects 7 others before dying, fuelling and prolonging the pandemic. Continuing treating as we are would cost as much over the long run as introducing testing and universal treatment on an unprecedented scale.

The cogently reasoned and sensitive mathematical model is based on South African epidemiological data. It streamlines Canadian research published 2 years ago, derided and dismissed on grounds of expense, toxicity and drug resistance, factors that today carry less weight, enabling the vital debate to finally take off.

Co-author of the study, WHO HIV/AIDS Director Kevin De Cock, says the idea is 'to stimulate discussion'. A central pillar of the model is the widely held assumption that treatment reduces a person's infectivity by 99%. Comparisons are made of the impact of thwarting new infections when people start treatment at various stages of immune decline. The model also assumes that all adults in test case communities accept being tested for HIV once a year on average and that all HIV-infected people access ARVs as soon as they are diagnosed positive.

SA the research guinea pig

Citing South Africa's adult prevalence of 17% and using a higher cut-off treatment initiation CD4+ count of 350 than the current 200 level (which the South African National AIDS Council (SANAC) is considering upping), the study estimates that at this point an HIV-positive person has already infected three others. However, if



treatment started shortly after people became infected, the HIV-positive person would on average infect less than 1 person each, and the severe South African epidemic would die out in 14 years. The strategy could also help reduce the incidence of TB and the transmission of HIV from mother to child.

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De Kock counters the argument that poor countries can only afford to treat those most in need (200 CD4s and below) by noting that 3 million citizens of such countries now receive ARVs that were once deemed impossibly expensive for them.

The new model on the block brings into sharp focus the debate over public health versus individual benefits. It comes hot on the heels of appeals for researchers to apply their findings for the common good instead of 'hiding behind the fig-leaf of individual rights', made in an ethics session at the Global Ministerial Forum on Research for Health in Bamako, Mali in mid-November last year.

Geoffrey Garnett, an epidemiologist at Imperial College London (St Mary's), says the model promotes public health over individual benefits. He adds that it remains unclear that early treatment delays disease and death and could actually increase the risk of drug resistance developing.

Quoted on Science Mag.Org, Garnett contends that eliminating the epidemic is too ambitious a goal given the ethical, financial and logistical issues. However, he notably concedes that even if the strategy didn't reach all infected people, it 'could have a big impact on spread'.

'It's not an idea to dismiss out of hand – it really throws down the gauntlet,' he says.

Detractors of the theory cite the 80% of infected people in sub-Saharan Africa who do not know their status, the toxicity and resistance dangers of sub-standard ARVs (so often used in poorer countries), compliance and start-up and maintenance costs.

Spend billions now, save money and lives tomorrow

The WHO researchers' preliminary cost analysis for South Africa shows that by 2015 the country would have to spend three times as much on testing and treatment as it does today – but because of declining infection rates, costs would then begin to steadily decline.

Says De Kock: 'In the long run it saves money. Front loading the investment on ARVs is a very wise choice, even in a time of financial crisis.' He concedes that more research is needed to prove that starting treatment at the earliest possible point does not lead to toxicities and drug resistance that offset long-term benefits.

Bringing it down to basics, he asks: 'How would you like it if I say, "You don't qualify for treatment, but I want to treat you so you don't expose anyone else?"' He and his team want research colleagues to conduct small-scale trials of voluntary testing and immediate treatment to assess the impact on infected individuals and see whether implementation bears out their sizzling theory.

An estimated 5.7 million South Africans were HIV positive last year (2008) when the epidemic had matured in five provinces but was still growing rapidly in the Eastern Cape and to a lesser extent in the Western Cape,

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Northern Cape and Limpopo.² 'Mature' means that new infections and deaths are more or less at the same level so the total number of infected people remains constant. This overall national 'maturity' has HIV infection and deaths converging to a level between 400 000 and 500 000 per annum.

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The largest number of HIV-positive people (1.5 million) live in KwaZulu-Natal, where ART uptake is estimated at 43%. Gauteng has the second largest epidemic (1.4 million) with 60% of those in need of treatment having taken it up. The Eastern Cape lies third (730 000) with 44% ART uptake. The Western Cape has the highest ART take-up rate at 74%.

Local response cautiously optimistic

Most top South African HIV/AIDS actuaries agree that prevention strategies need dramatic upscaling while increased treatment take-up in provinces with mature epidemics will limit the impact of AIDS-related deaths on households and economies.

The Treatment Action Campaign (TAC) says mathematical and scientific communities need time to digest the new research before repeating it for vital confirmation. Rich countries would have to fund poor countries, if there was confirmation that led to pilot studies, the scale of which was open for debate.

The impact on adherence, acceptability and sexual behaviour needed 'urgent probing' while care was needed not to undermine any effective current prevention strategies.

'If we answer these questions while vigorously pursuing current scaling up and the study's recommendations are



feasible, Africa and the world would have a very different future,' the TAC added.

Izindaba sources within National Treasury said that the proposal would be 'seriously considered from an economic perspective' - if the experts took a position that it was the most appropriate treatment modality backed by hard evidence. 'But I think it would be limited far more by human resources and management capacity than by money,' one observed.

Professor Helen Schneider of the University of the Witwatersrand's Centre for Health Policy, was quoted as saying the model would require 'massive societal buy-in to get people tested once a year and to take treatment for public health purposes rather than

individual benefit'. She questioned whether similar outcomes were not possible 'if the same kind of effort,' was invested in current programmes.

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Professor Salim Abdool Karim, Director of the Centre for the Durban-based AIDS Programme of Research of South Africa (Caprisa), said the premise of the strategy remained theoretical until data emerged from the current HPTN 052 trial probing whether treating HIV-infected patients immediately after diagnosis reduces the likelihood of HIV transmission to their sero-discordant partners.

He believed South Africa's overburdened health care system would

be unlikely to cope with such rapid scale-up of testing and treatment, while drug toxicities, resistance and treatment adherence would pose substantial implementation challenges.

Within weeks, the WHO is due to bring together ethicists, funders, human rights advocates, clinicians, prevention experts and AIDS programme managers to discuss the research and other issues related to the wider use of ART.

The WHO stressed that male circumcision, partner reduction, correct and consistent use of condoms and interventions targeting most-at-risk populations needed stringent maintenance and urgent expansion.

Chris Bateman

1. Granich RM, Gilks CF, Dye C, De Kock KM, Williams BG. Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model. *www.thelancet.com*. Published Online, November 26, 2008. DOI: 10.1016/S0140-6736(08)61697-9. Last accessed: 10 December 2008.
2. Summary of Provincial HIV and AIDS statistics for South Africa. Prepared by Nathea Nicolay, Metropolitan, October 2008. Pages 1-8. ASSA2003 (full) AIDS and Demographic model available on: www.actuariesociety.org.za.