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Remember, we will welcome your letters should any of the above invoke the need to respond! However, I hope this edition will also raise discussions at your place of work and among your colleagues. Whichever, I hope you enjoy it, and am happy that we have got to a position in our country where relevant and appropriate issues can be freely debated.

LINDA-GAIL BEKKER
Editor

What is most frustrating, though, is the silence of the medical fraternity in all this. Where are the local health care worker and public health organisations, condemning their government's idiocy? For too long patients have had to rely on treatment activist organisations and international agencies to protect them. Health care worker organisations should loudly condemn unscientific approaches to dealing with HIV, especially when these may harm their patients.

HIV prevention has proven very complicated. Quick-fix, emotional, prejudiced and unscientific solutions are hardly going to help. Governments listen to health care workers, as we have status and power. Organisations need to stand up to dangerous policy and legislation.

FRANCOIS VENTER
President

FROM THE EDITOR

MESSAGE FROM THE EXECUTIVE

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Ruben Sher came into my life at perhaps its darkest moment. I was diagnosed with HIV on a rainstorm-filled Friday afternoon in the second half of December 1986. My well-meaning doctor, who had not obtained my consent, phoned me with the bad news and left me in anguish, not only for the weekend but for the ensuing years.

His one act of solicitude in telling me that I was infected with HIV was to suggest that I contact Professor Ruben Sher at the South African Institute of Medical Research (SAIMR).

Uncounselled, unadvised and unsupported, I saw a grim future ahead. And indeed the ensuing years - years of fear, silence and inner shame - were hard.

My HIV diagnosis was shocking for two reasons. I was 33 at the time. I was building a growing practice as a human rights lawyer at a time of challenge and excitement. My diagnosis meant death. There was no cure for AIDS. Indeed, there was no treatment for it. Palliation was the best that medical science could offer. The mortality figures from North America and Western Europe, where the epidemic still seemed predominant, were horrific. By late 1986 perhaps half a million people had died of AIDS in North America alone - most of them, like myself, gay men in the prime of their lives. I had no doubt that death would overtake me soon.

The further reason why my diagnosis shocked me so was in many ways worse. It was the sense of shame, embarrassment, defilement and pollution I felt at being infected with HIV - possibly the most stigmatised disease in human history. I thought my shame stemmed from the fact that, only just out of the closet as an openly gay man, I had become infected with HIV.

But, as I was soon to discover, my shame and the stigma of AIDS had little to do with homosexuality. I became involved in AIDS work not because of my own bodily engagement with the epidemic, but through my human rights work. And through it I met people who, seemingly very different from myself in that they were black and mostly women and mostly poor, nevertheless shared with me a sense of fear and horror at being known to have HIV.

In this bleakest time, I did follow my doctor’s advice. I contacted Ruben Sher at the SAIMR. I well knew who he was. An avuncular Spike Milligan-like presence on TV, he had already assumed the role of a foremost public health commentator on AIDS. And he did not merely seem avuncular. He was in truth a voice of compassion and reason in the midst of an epidemic of stigma and fear.

While many of his clinical and academic colleagues - including surgeons at Baragwanath and some academics at Wits - called for isolation and compulsory screening, Ruben stood out as a voice of rationality and justice.

He made the obvious points - that HIV is difficult to transmit; that testing could be imprecise; and that there was no cure for those who sought to be diagnosed. But in times of panic the obvious is rarely stated. Ruben’s courage and clarity and persistence in voicing the call for justice in dealing with the epidemic justify our honouring his memory this evening.

At one of the lowest points in my life, on a warm March day in 1987, I went to see him. He offered me kindness and reassurance and, importantly, utter confidentiality. He suggested that I be tested again. And when (inevitably) the test returned positive, he imparted the news, as such news should always be imparted, with gentle matter-of-fact kindness.

As the epidemic grew, Ruben and I started working together. He asked me onto platforms with him. We started being invited to speak together. We even trav-
elled together. I remember one eccentric expedition to Tzaneen, where he and I were billeted in a luxury country lodge for the purpose of speaking to hundreds of farm workers and local officials about AIDS.

Working with Ruben could be trying. In fact, he could drive you nuts. He had a joke he invariably told. It was that you could get HIV whether you are heterosexual, homosexual, bisexual or trisexual. What is trisexual, Ruben would ask his audiences? He would confide triumphantly - it was someone who will try anything.

He had another joke. This one I like better. It was about a rich suburban lady who phoned him suspecting that her Malawian gardener had HIV. She confided to Ruben her fears about her proximity to him. Might he have infected me, she asked? His reply - according to him - was 'Madam, when last did you have sex with your gardener?'

I greatly cared for Ruben and honoured his roles as an academic, as a crusader for right, as a caring clinician and as an astute physician. He gave me a gavel when I became a judge - but the symbol of dispensing to all alike without fear or favour was as appropriate for him as it was for my new job.

For tonight’s lecture I hope to meld the themes that entwined my own life with that of Ruben Sher - namely HIV infection, testing, stigma and shame.

FOUR SOCIAL FACTS - MASS SCALE, MEDICAL MANAGEABILITY, CONTINUING DEATHS, AND STIGMA

Four features of the AIDS epidemic stand out in any attempt to grapple with its social meaning.

- First, its scale. Even on recently adjusted lower estimates, AIDS is human society’s largest microbially borne pandemic for seven centuries - since one-third of Europe’s people died in the great plague of the mid-14th century. Estimates reckon that globally there are around 33 million people living with HIV or AIDS. Of these the great majority (67% or 22 million in 2007) are in sub-Saharan Africa. More than 13 million are black women, and roughly 2 million black children. The total number of people who have died of AIDS is probably close to 30 million (in South Africa, according to the Actuarial Society of South Africa, 2.5 million). Many more deaths are likely to come.

- Against thisnumbing volume of human fragility, suffering and death stands counterposed a second fact - that infection with HIV is now fully medically manageable. The revolution that the arrival of treatment implied was not universally or immediately recognised. But it was momentous. If diagnosed early enough, with properly administered combinations of antiretroviral (ARV) medications, the bodily progression of HIV can be stopped, and those sick with AIDS can be restored fully to life and health.

My presence here tonight - more than 12 years after I fell severely ill with AIDS - is evidence of the long-term success and sustainability of treatment. Perhaps the most important political fact about treatment is it works for poor and wealthy patients, in rural and urban settings, and in economically developed as well as undeveloped areas. Given the shroud of horror that surrounded the disease in Western Europe and North America in its first 15 years, and still surrounds it almost everywhere else, this is still a radiant fact. But, as I will show, it continues to be insufficiently appreciated.

- Third, despite the medical manageability of the disease, and the fact that treatment for it - certainly compared with other long-term chronic conditions such as insulin-dependent diabetes - is relatively simple, and that it is increasingly available, millions of people are still dying of AIDS. Especially in Africa: in 2007, 1.5 million people died (75% of all AIDS deaths), 350 000 of them in South Africa. In any terms, this is monstrous: avoidable human suffering, unnecessary deaths, wasted lives.

- But why are people still dying of AIDS in Africa and elsewhere when the disease can be easily managed? Much death and illness can be ascribed to the developmental deficits of the locations worst affected: poor health care infrastructure, missing or poorly trained personnel, Africa’s burdens of disease (including other easily preventable and treatable diseases), and poverty.

- But much is due to the fourth and most signal fact about AIDS - namely the stigma that surrounds it. It is this I want to talk about tonight: the fact that dying and suffering that is attributable to stigma persists in an epidemic of otherwise manageable disease.

STIGMA AND PUBLIC HEALTH/POLITICAL RESPONSES TO AIDS

Stigma is the mark of blame, rejection, disapproval and shame that society places on conduct and conditions that repel it or elicit its moral censure.

From the first day, society’s reaction to AIDS has been defined by stigma.

More than any other disease - more than leprosy, tuberculosis, and the black death, for all of which people
felt understandable fear of contagion - HIV has been intensely stigmatised, even though its transmission occurs in known and narrow circumstances.9

It was stigma arising from its initial manifestation among gay men that led President Ronald Reagan to maintain what Randy Shilts called a ‘ritualistic’10 (and blameful) silence about AIDS, for six long years, from 1981 to 1987, implicitly conniving in the deaths of hundreds of thousands of men in the prime of their lives.

It was stigma, less than the rational pursuit of public health goals, that led countries as different as Sweden11 and Cuba12 to isolate and detain those with HIV.

And, perhaps most catastrophically, it was stigma that caused our own country’s President Thabo Mbeki to question the viral aetiology of AIDS. He did so because he took umbrage at the notion of an epidemic of sexually transmitted disease manifesting in mass form among black Africans.13

For 28 years, stigma has pervaded and defined this epidemic. This triggered debate between those who advocated applying ordinary public health measures to the disease, and those who contended that this was inapposite and unjust.

Many argued that the disease should be treated by applying well-known public health principles - primarily in identifying, reporting and isolating those infected with HIV.

Yet HIV was different.

- First, for 15 long years doctors could do very little about it. They could offer only palliation. So diagnosis had strictly limited value.

- Second, a different approach was warranted because of the years of relative wellness that most enjoy before AIDS sets in, and because of difficulties (both technical and patient-related) in diagnosing infection.

- But the overriding - and most persuasive - argument for exceptional treatment of HIV was that society’s reaction to it was exceptional.14

It was not the infectiousness of HIV, or its viral properties, or its morbid or mortal effects (for in this it was not intrinsically different from many other conditions) that made this disease different: it was stigma.15

It was stigma that necessitated anti-discrimination protections for those with HIV or suspected to have it, in medical care, housing, jobs, public facilities and anti-violence legislation.16

**THE PARADIGM OF AIDS EXCEPTIONALISM**

The ensuing debate resulted in a decisive victory for those who urged human rights protections for people with HIV/AIDS. The preponderant, if not quite universal, consensus among public health experts was that AIDS required special treatment. The only dissentients seemed to be policy deviants making ill-judged populist appeals - and even these proved mostly ineffectual.

In our own country, the African National Congress government came to power just as the epidemic seeped remorselessly southwards. In August 1994 it adopted a national AIDS plan that expressly espoused the international human rights consensus, and enacted a very sizeable body of legislation that protects the rights of those with HIV and prohibits unfair discrimination against them.17 The courts have followed suit.18

The most eloquent voices justifying this approach were Dr Jonathan Mann19 and later Justice Michael Kirby.20 Their powerful advocacy of the ‘AIDS paradox’ - the notion that human rights protections for those with and at risk of HIV is an integral component of sound public health practice, and not its enemy - achieved not only moral, but intellectual predominance in virtually all places where international and national AIDS policy was made.

And rightly so. The wellspring of the AIDS paradox is stigma. Because of discrimination and ostracism people are reluctant to be tested, and hence cannot be reached for counselling, treatment and behaviour change interventions.21 Traditional public health measures (mandatory testing,22 partner notification, quarantine) merely fuel their fears, driving the disease underground, thus proliferating its spread.

The rational way out is therefore more, not fewer, human rights safeguards for those with HIV: to allay their fears, and to alleviate the horrific impact on them of abuses and malpractices. Only with its main bearers thus protected can the epidemic be rationally managed.23

Stigma, the source of the problem, was in this approach confronted obliquely - by protecting those with HIV from its effects; first, by shielding them from the terrifying invasion traditional public health approaches entailed; and second by enacting anti-discrimination protections to diminish the injustice of ostracism.

**AIDS EXCEPTIONALISM AND BROADENING ACCESS TO TESTING**

But the key practical product of the AIDS paradox, and perhaps its most telling achievement, lay not in warding off invasive public health measures, nor in the enactment of anti-discrimination laws. It took effect in
the medical diagnosis of HIV. It was to hedge testing for HIV with significant prerequisites.

To test for HIV a health care practitioner could not assume consent: nor could it be implicitly, or even generally, given. It had to be explicit, and it had to be specific.

In many jurisdictions, it had to be given in writing. In some, even written consent was not valid unless the test was preceded by statutorily prescribed counselling. In the pre-test counselling session, the counsellor had to warn the patient not merely of the medical implications of a positive diagnosis, but of its social repercussions — the discrimination and ostracism the patient would almost certainly face in consequence.

What is more, because of the risk that those choosing to test might be inferentially associated with HIV, testing had to be done in near-secret — at separate locations, on separate days, in unmarked (or code-marked) rooms. And special measures had to be taken to ensure that the resultant patient information was handled confidentially.

The unquestionable consequence of all this was massive disinducement to testing.

And not without reason. For as long as the major outcome of a positive diagnosis was ostracism, and for as long as doctors were powerless to offer more than palliation, there was little justification for exhorting those at risk to be tested. Its only point was to help them make better lifestyle and safer sex choices.

The disinducement was therefore warranted — and the AIDS paradox served us well for the epidemic’s first 15 years.

In some parts of the world, it still serves us well. In the countries of South and East Asia, and in comparably affected regions, human rights activists continue to report that an HIV diagnosis too often provides an excuse for mistreatment, exclusion and denial of medical and other facilities. It remains primarily a badge of shame and a basis for ostracism (including the enactment of harsh criminal laws that target those with HIV).

I can attest to these harsh realities, for they were vividly reported to me in Colombo in September 2007, and in Beijing in October 2008.

In these countries reluctance to testing for HIV remains understandable.

Yet the causes may lie in a distinctive epidemiological pattern. In countries such as India, China and Malaysia the epidemic remains overwhelmingly associated with groups that are still socially and politically marginalised — mainly men who have sex with men, commercial sex workers and intravenous drug users. Public health interventions and policy in these countries necessarily have to recognise this — also in relation to testing.

Yet, since the mid-1980s, the most striking demographic feature of the epidemic has been its racial and continental overload. Most people with HIV are Africans. And most of those dying of AIDS are Africans — more specifically, Africans in the Bantu-speaking regions of central and southern Africa.

In these regions, AIDS is a mass epidemic of heterosexually transmitted disease.

What is distinctive about this epidemic is not merely that the vectors of transmission are different — it is that its consequences are omnipresent.

It is impossible to ask any audience in central or southern Africa who among them have lost family members to AIDS, without a massed sea of hands rising in result. AIDS is everywhere, and its deathly impact presses on every household, every family, every workplace and every street.

And the worst is this. Despite the availability of treatment, despite the good news of its increasingly known efficacy, despite the knowledge of family support and despite legislative and social protections against discrimination, many people in Africa continue to contemplate testing for HIV with dread reluctance. More than dread: deathly reluctance.

DISINCENTIVES TO TESTING

The fact is that many Africans experience stigma so intensely that they ‘prefer’ (if in such constrained circumstances one can speak of preferences) to die, rather than to be diagnosed with HIV.

Part of this deathly dread stems from the external manifestations of stigma — the enacted discrimination, exclusion, dispossession and violence that are the social product of stigma; since undoubtedly well-warranted fear of discrimination by others inhibits many from choosing to be tested.

But a greater part, in my view, and perhaps the more crucial part, results from internal stigma. This is because too often the external stigma of AIDS finds an ally within — in internalised feelings of contamination, shame, self-revulsion, abasement, defilement and dread that those with HIV and at risk of it experience about themselves — even when they know they will receive acceptance and support from others.
Much of this, I suggest, derives from the fact that, overwhelmingly, HIV is a sexually transmitted disease: and we still poorly understand the intensity, intimacy, embarrassment and shame that our need for sexual connection – which seems to be inescapably human – occasions.28

A great deal has been written about external stigma; but surprisingly little – perhaps astonishingly little – about internal stigma. (In a review article in the issue of the journal AIDS published to coincide with the international AIDS conference in Mexico in August 2008, there was extensive discussion of stigma and its external manifestations, but no apparent recognition at all of its internal dimension.29)

Internal stigma consists not of fear of discrimination or hostile treatment at the hands of peers or colleagues, or dread of others’ reactions. It is something more opaque, and therefore difficult to confront. It is often stronger than a cognitive appreciation that friends, family and colleagues will offer love; it is stronger even than the knowledge that treatment is now readily accessible (even in many poor African countries). It ultimately proves stronger than the capacity to make life-affirming choices, because it paralyses them in favour of postponement, avoidance and death.

It is the most intractable part of stigma because it comes not from others, but springs from within. And it is more insidious, and more destructive, than external stigma, since it eludes the direct politically determined confrontation with which we fight discrimination.

The result of internal stigma is death, needless death, and its gross attendant human and social costs of suffering, bereavement and loss.

**INTERNAL STIGMA AND OBSTACLES TO TESTING – THE ROLE OF HUMAN RIGHTS PROTECTIONS**

Recognising stigma’s internal dimension raises a new set of questions. These have been particularly hard for AIDS activists and human rights protagonists to confront.

If stigma stems not only from the hostile ‘other’, but partly from within those who themselves have HIV, we need new methods of understanding its origins and its effects. We need to understand with greater insight what we are combating.

Here I have made an inflammatory suggestion. It is that the very differentness attributed to AIDS, especially in the health care setting, is one of the principal causes of internal stigma, or at least powerfully underscores it. The suggestion involves a provocative corollary: that the human rights protections, carefully and necessarily erected during the early stages of the epidemic to protect against discrimination, have themselves become a potent source of harm.30

Particularly in HIV testing, human rights safeguards have become harmful because they emphasise the differentness of AIDS. This reinforces internally those who are scared to test the exceptional, untoward, and distinctive features of AIDS.

Instead of people being diagnosed with mundane medical regularity, and steered towards treatment, diagnosis is hedged around with a fuss and palaver and hullabaloo that accentuates the feelings of self-disabling ignominy those at risk of HIV experienced.

In the age of treatment – where AIDS can be medically managed, if only those suffering its effects can be reached timeously – this is a hideous cost.

We cannot without untruth deny or ignore the part that the protections erected against testing play in exacting this cost. Exceptionalism was a necessary response to the public ignorance, disdain, moralism and ostracism those with and at risk of HIV experienced; but it was also its logical counterpart.

Exceptionalism, born in reaction to stigma, has itself helped spawn stigma.

A new and grim equation must be inscribed on the wall of AIDS remembrance, a footnote to the activists’ famously plangent equation in the 1980s that Silence = Death: the new equation is that Differentness = Death.

These considerations have given rise to acrid debate between those urging radical expansion of testing in mass-prevalence areas where treatment is available, and those who resist it.

The debate echoes that about AIDS exceptionalism in the 1980s. And its logical and formal premises have hardly changed: its essence still concerns the extent to which ordinary medical precepts and procedures should be applied to the management of HIV.

The contesting protagonists have changed. No longer, as in the 1980s, are the protagonists of de-exceptionalising the disease AIDS-ignorant policy wonks insensitive to its science and politics. They are experts who are themselves deeply versed in the clinical and human skills of AIDS treatment and prevention.

But, more significantly even, the factual setting of the debate has changed. The increasing availability of treatment is now the most important social fact about AIDS.
The test for AIDS policy is whether we can ensure that treatment effectively eclipses stigma, yet without sacrificing any single patient’s right to choice, or to confidentiality.

And in this difficult quest, rigid policy positions are un­efficacious and unhelpful.

On one side, those who support testing expansion point out that:

- ‘Unlike other infectious diseases (e.g. syphilis, hepatitis B), for which consent for testing is implicitly assumed by virtue of medical consultation, and diagnosis is encouraged, the diagnosis of HIV infection has often been actively avoided. In many ways the approach to diagnosis of HIV infection has been more similar to that of an incurable genetic disorder than to an infectious disease.’

As a matter of fact, this analysis is incontestably accurate. Yet it provoked intensely ireful reaction.

This was because of the same authors’ assertion that ‘the emphasis on human rights in HIV/AIDS prevention has reduced the importance of public health and social justice, which offer a framework for prevention efforts in Africa that might be more relevant to people’s daily lives, and more likely to be effective.’

On the other side, human rights advocates have resisted the medical ‘normalisation’ of HIV diagnosis, principally on the premise that expanded HIV testing infringes patient autonomy, and that it exposes those subjected to it to violation of their rights.

Instead of radically and immediately increasing access to testing to diminish the deficit between treatment and death in Africa, we have been told that we must focus on the anxieties of ‘the disempowered and still fearful … by demanding investment in dignified health systems and protection from harmful social and legal effects of their health status being known.’

The argument of those favouring expansion, that death is the ultimate rights violation, and that testing inhibitions collude with it, has not been acknowledged to have force against the motive forces of a ‘real world’ influenced by poverty­determined life choices, gender­ based violence, [and] fears of discrimination and stigma.

In this setting, human rights advocates have treated with suspicion or resisted:

- Rapid and more easily accessible forms of testing for HIV (including home­test kits) – currently, HIV tests are not available at the largest retail pharmacy chain in South Africa, Clicks Pharmacy, as well as Dis­chem Pharmacies, another large pharmacy chain. Yet home test kits are available for pregnancy, ovulation, prostate cancer, cannabis, and alcohol (breathalyser): some of the arguments against rapid access to testing are feeble, but some should justly be denounced as bizarre.

- Legislation that compels mothers who might risk passing HIV to their babies to test for HIV so as to be able to receive prophylaxis that would reduce the risk.

- The implementation of opt­out testing in Botswana (a mass­prevalence country where patients presenting for treatment at any public health facility have since 2002 been tested for HIV unless expressly refusing) – even though evidence indicates that ‘opt­in’ requirements (where the patient must expressly choose to be HIV tested) cause deaths.

More recently, an article suggesting that universal ARV provision to everyone testing positive for HIV (using a mathematical model of HIV reduction in which everyone seroconverting to HIV is tested within a year) could be an important possible means of preventing and even eliminating endemic HIV dissemination, triggered vigorous criticism from those concerned at its overly medicalist approach.

A group of respected human rights experts issued a statement complaining that the analysis did not address ‘the issues of acceptability and safe applicability of universal testing and treatment in the face of widespread stigma and discrimination’, and that it ‘threatens to serve as justification for imposing mandatory HIV testing’.

This response seemed to me not only to miss the point of the mathematical model; it attributed an unconcern about rights protections to the authors which seems to me troublingly misplaced.

It also failed to appreciate that the authors’ argument finally unseamed one of the great canards of the epidemic, namely the supposed disjunct between treatment and prevention, by successfully telescoping the two into one overriding public health strategy.

In my view, we should immediately urge the Health Professions Council to adopt testing guidelines that permit for radically expanded testing.

In this regard, I commend the suggested minimum reasonable approach to testing that Nathan Geffen proposes for a busy, resource­stretched, but functional public health facility.

He suggests that the counsellor follows the following standard procedure with all patients who s/he judges have some risk for HIV:
‘Ms X, I would like to proceed to give you an HIV test. If you have HIV, we can help you to live a healthy life because there are safe and effective medicines to treat you.’

At this point Ms X either says No (which is unlikely) or permits the blood to be drawn.42

To propound radically expanded testing - in this or other forms, including opt-out testing that does not even mention HIV specifically when a patient presents for general medical treatment - is not to ignore stigma (or to sacrifice confidentiality). It is to seek to mitigate it by more directly effective interventions than have hitherto been applied - including the beneficent effect of more widespread testing and diagnosis - as well as bringing home the fact that testing is a necessary first step to life-restoring treatment.43

It is here where recognising the role of internal stigma is critical. To see that stigma is not exclusively external, and that anxiety about testing is not solely about discrimination, is to open a vista of new, more flexible and supple policy positions, and more fruitful debate.44

Crucial to that is recognising the cost that human rights may now be exacting in fuelling stigma and in impeding access to testing and treatment.

This is not to decry the vital role of human rights activists in the past - or in the present: it is to question the focus of their engagement. The current trend toward enacting harsh criminal statutes in Africa, that specifically target people with HIV, seems to me a much more pressing and important issue than resisting expansion of treatment.

What is more, there has been a heavy shift of the weight of the argument in favour of expansion of treatment.45 President Zuma, in a remarkable address to the National Council of Provinces on 29 October 2009, urged ‘a massive mobilisation campaign’ for testing. The President stated:

‘Let me emphasise that although we have a comprehensive strategy to tackle HIV and AIDS that has been acknowledged internationally, and though we have the largest anti-retroviral programme in the world, we are not yet winning this battle. We must come to terms with this reality as South Africans. We must accept that we need to work harder, and with renewed focus, to implement the strategy that we have developed together. We need to do more, and we need to do better, together. We need to move with urgency and purpose to confront this enormous challenge. If we are to stop the progress of this disease through our society, we will need to pursue extraordinary measures. We will need to mobilise all South Africans to take responsibility for their health and well-being and that of their partners, their families and their communities. All South Africans must know that they are at risk and must take informed decisions to reduce their vulnerability to infection, or, if infected, to slow the advance of the disease.

‘Most importantly, all South Africans need to know their HIV status, and be informed of the treatment options available to them. Though it poses a grave threat to the well-being of our nation, HIV and AIDS should be treated like any other disease.

‘There should be no shame, no discrimination, no re- criminations. We must break the stigma surrounding AIDS.’46

Common ground between testing expansionists and human rights proponents exists. It lies in their joint commitment to lessening AIDS deaths and human suffering. But harnessing the joint energy in service of those worst affected by the epidemic will require greater flexibility than has until now been evident.

Instead, until now, responses from human rights protagonists have seemed to suggest an overly defensive posture, reacting with alarm to creative new models and suggestions, rather than engaging constructively with them, in the light of the central and luminous fact that testing is the indispensable prerequisite to treatment and care, and thus that it embodies the difference between life and death.47

The AIDS epidemic has made the world sadder and older and perhaps wiser.

Some of what we have learnt from the epidemic is that due commitment to medical beneficence cannot always be assumed. We have also learned that technology and science alone will not provide answers if they ignore complex human reactions that spring from the material conditions of people’s lives.

But suspicion about medical beneficence and reserve about technology’s role does not justify rigid, inflexible and unresponsive defence of human rights protections that may have become outdated and inapposite.

Ruben Sher would have regretted the inaccurate characterisations and unproductive dichotomies that have resulted.

AIDS has been a heavy consciousness, burdening our beings and exacting, at least in Africa, a continuing daily price in grief and bereavement and mourning.

But in the end AIDS exacts its toll on human bodies. If all could see that more clearly - those at risk of HIV no less than human rights activists and the medical
specialists eager to expand testing and thus save lives — we may begin to assert the primacy of the material and the rational over the shadow of stigma and misconception.


3. Idem at p. 33 (globally, there are 15 children (under 15) living with HIV, of whom almost 90% live in Africa).


5. See UNAIDS Report, at p. 33 (globally, there are 2 million children (under 15) living with HIV, of whom almost 90% live in Africa).


9. Stigma (a process model): ‘Disease stigmatisation can be defined as a social process by which people use shared social representations to distance themselves and their ingroup from a disease by [d]efining it as preventable or controllable; [b] by introducing ‘immoral’ behaviours in contracting the disease; [c] by associating these behaviours with ‘carriers’ of the disease in other groups; and [d] by thus blaming certain people for their own infection and justifying punitive action against them’ (Deacon, Understanding HIV/AIDS Stigma: Cape Town: HSRC Press, 2005, p. 23).


14. Ronald Bayer, ‘Public health policy and the AIDS epidemic. An end to HIV exceptionalism’ (Am J Bioethics 2006: 6: 48). S implies AIDS exceptionalism as ‘a notion that being diagnosed with HIV is so different from any other diagnosis that it must be handled very differently. There should be exceptional confidentiality protections, because the testing involves no sensitive; exceptional informed consent, because the test is so personally invasive; and exceptional caution prior to testing, since a positive result can be so disruptive’. It has rightly been pointed out that this view of HIV testing in particular derives from the psychiatric counselling model of testing for untreatable conditions, which no longer applies: Frieden TR, et al, ‘Applying public health principles to the HIV epidemic’ (N Engl Med J 2005: 355: 22: 2397).
33. A recent statement, ‘Civil society statement on ART as prevention: Scaling down HIV requires scaling up human rights, testing and treatment’, submitted to the 39th IAS Conference on Antiviral Research (http://www.icaso.org/resources/2009/39thIAS_Conference_EN.pdf), states: ‘We urge UN bodies, donors and researchers involved in this exploration to be mindful that people living with HIV and many who are highly vulnerable to infection are unable to gain access to HIV testing and to initiate treatment earlier, in a timely fashion, as a result of many human rights violations, as well as clinical and systemic barriers. Research models that do not adequately consider and address these do a disservice to the important goal of making ART available to all as both prevention and treatment.

34. It is neither desirable nor possible to scale up voluntary HIV testing and treatment substantially to impede the spread of HIV as preventive measures without addressing these human rights, clinical and health-systems challenges. Supporting and strengthening civil society organizations in affected communities in the work of creating enabling environments are crucial to achieve this goal.

35. ‘And neither is the renaissance of ART as prevention must include an assessment of the social, policy and legal framework to address impediments to human rights protections and barriers to testing and treatment uptake before the study proceeds.’

36. ‘When Ms X’s CD4 count falls below 350, Ms X must start ARV treatment which involves taking a pill every 12 hours for the rest of her life. Ms X can continue to use sex without condoms.

37. ‘Ms X can have a child if she chooses, but she will need to take measures to reduce the risk of the child contracting HIV. (The same goes for a Mr X.)

38. ‘Counsellor informs Ms X that if she is distressed or confused, she can contact him/her for further counselling.


40. ‘I am indebted to Dorgon Gonals (private communication, 4 February 2009) for the following perceptive comments: ‘The fear of death and the fear of lack of access to treatment constitute an important aspect of the internal stigma and present a substantial barrier to consent to testing. The fear of testing stems from a deep psychological desire to avoid the knowledge that one has been infected with the disease and is therefore dying, compounded by the lack of knowledge of treatment and whether treatment will be available. In addition, the nature of the calculation that one makes relating to one’s relationship with death or behavior feeds into fear and internal stigma.’

41. ‘Federal health officials in the United States will conduct a study implementing the strategy ‘Test and Treat’ in two locations with some of the country’s highest HIV infection rates, Washington, DC and the Bronx. The goal is to stop the spread of HIV by routinely testing virtually every adult in the community and providing prompt treatment to those who test positive. This is a first step not to measure whether the programme actually works to slow the epidemic, but to find out whether such a strategy can even be carried out given the many obstacles to testing and treatment.

42. ‘We at AIDS Healthcare Foundation (AHF) believe that the best way to reach the estimated 33 million people living with HIV/AIDS is to identify those who do not know they are infected and link them to treatment. This is also the best route to combating the spread of the disease, as it is believed that the source of the majority of new infections in countries where AHF is active is not due to those who are HIV-positive, but due to those who are not.

43. ‘Counsellor informs Ms X that if she is distorted or confused, she can contact him/her for further counselling.

44. ‘That Ms X needs to have a CD4 and viral load test every X months and what these measure.

45. ‘When Ms X’s CD4 drops below 350, Ms X must start ARV treatment which involves taking a pill every 12 hours for the rest of her life. Ms X can continue to use sex without condoms.

46. ‘Ms X can have a child if she chooses, but she will need to take measures to reduce the risk of the child contracting HIV. (The same goes for a Mr X.)

47. ‘Counsellor informs Ms X that if she is distressed or confused, she can contact him/her for further counselling.


49. ‘Granich et al. do not, as has been claimed, give ‘unexamined endorsement’ [to annual universal testing], rather they pose a hypothetical question - if there were such testing, and immediate and antiretroviral therapy, would endemic HIV transmission cease; and their suggestive - hopeful - answer is yes. See the discussion on AIDSmap of the Granich et al. article, available at http://www.aidsmap.com/articles/3282464.aspx (accessed 20 November 2009).

50. ‘Universal testing and treatment is only likely to be cost-effective in settings where HIV is hyper-endemic and where AIDS seriously threatens long-term stability and growth. Further cost-effectiveness analysis will be needed. The WHO analysis looks at the relative costs of pursuing the universal approach or testing people when their CD4 count falls below 350 cells/mm³. The universal approach demands substantially greater expenditure during the first two decades, but begins to become cheaper than the default treatment approach by 2030. This balance and time-scale may differ in other countries in the southern Africa region.’

INNOVATIVE RESPONSES FOR PREVENTING HIV TRANSMISSION: THE PROTECTIVE VALUE OF POPULATION-WIDE INTERRUPTIONS OF RISK ACTIVITY

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Concurrent partnering contributes to high HIV prevalence. This is in part due to the natural history of the virus. After transmission, an individual’s viral load spikes in a period of ‘acute infection’ during which they are highly infectious. Models estimate that around 10 - 45% of HIV acquisition arises from sex with an individual in the acute infection period.

If everyone in a population abstained from high-risk sex for a given period of time, in theory the viral loads of all recent seroconverters should pass through the acute infection period. When risk behaviour resumed there would be almost no individuals in the high-viraemic phase, thereby reducing infectivity, and HIV incidence would fall. Recurring population-wide shifts in risk behaviour are not unheard of. Many, in fact, occur as part of existing religious observances. The month of Ramadan in Muslim communities is perhaps one of the most obvious cases. Ramadan sees significant behaviour changes. In addition to fasting from sunrise to sunset, observant individuals abstain from coitus during daylight hours. There is anecdotal evidence that risky sexual behaviours are also significantly reduced over this period. In Indonesia, for instance, it was reported that research with sex workers was not possible during Ramadan because people ‘abstained from sex from one end of the month to the other ... Many sex workers returned to home villages during this time.’

This article argues that a population-wide interruption of risk behaviour for a set period of time could reduce HIV incidence and make a significant contribution to prevention efforts. It calls for mathematical modelling of periodic risk behaviour interruptions, as well as encouragement of policy interventions to develop campaigns of this nature. A policy response, such as a ‘safe sex/no sex’ campaign in a cohesive population, deserves serious consideration as an HIV prevention intervention. In some contexts, periods of abstinence from risk behaviour could also be linked to existing religious practices to provide policy options.

THE ARGUMENT
There are scientific reasons to believe that population-wide periods of risk reduction could be effective. Additionally there is evidence to suggest that sexual behaviours, including periods of abstinence, driven by religious reasons, may have kept the prevalence low in Muslim countries. According to UNAIDS only one country in North Africa and the Middle East region (Sudan) had an HIV prevalence over 0.2%. In South and South-East Asia, predominantly Muslim countries such as Pakistan, Bangladesh and Indonesia show similarly low HIV prevalences, typically below 0.2%. There are serious challenges in attributing cause, however. The practice of male circumcision is near universal, and is highly protective against men acquiring HIV. While Islam permits polygamy, it prohibits sex outside marriage and discourages the consumption of alcohol and homosexual sex. All these factors may help explain the lower levels of seroprevalence in countries with large Muslim populations. Norms and patterns of sexual behaviour may also be quite different in observant Muslim communities compared with other groups. Indonesia, for instance, has a low national prevalence rate, estimated to only be around 0.2%, but Papua province has a majority Christian population and an HIV prevalence of 2.4%, over 10 times the national rate.

There are, however, cases where HIV prevalence appears to be unusually low in Muslim areas, even given high levels of risk activity. In Dhaka, Bangladesh, for instance, HIV prevalence apparently remains low despite common risk behaviours of injection drug use and commercial sex. So while confounding makes it
A potential intervention would be an aggressive national campaign to ensure that everyone who is sexually active in a population either commit to 100% condom use or refrain for sexual intercourse over a period of a month or longer. This would be a national campaign with buy-in from leadership at every level, from the President (or King) through church and business down to local community leaders. It could be trialled best in small homogeneous populations, and indeed the National Emergency Response Council on HIV/AIDS (NERCHA) in Swaziland has been considering it (personal communication with author AW). There is also evidence from Mozambique that a 2-month ‘cooling off’ period during which people would abstain from starting any new sexual relationships would be feasible and acceptable.13

**TESTING AND VALIDATION**

Avenues can be explored to test or validate the idea that population-wide interruptions in risk behaviour would slow the spread of HIV. On a theoretical level, ideally we feel that this should be further explored through mathematical modelling and estimation exercises. Such exercises could predict how a population-wide abstinence campaign might reduce infections, both in the month of abstinence and over the course of a year through reduction in average viral loads when risk activity resumes. However, models may require some additional survey data to inform their parameters.

In practice, an experimental trial would be impossible and unethical (abstinence is known to be protective on its own), nor would it be feasible to control some groups when such a wide-scale mobilisation effort might be needed to promote the behaviour change. However, discussions are under way to actually attempt interruptions in risk behaviour in this manner, and these must be observed with sufficient evaluation research to be built in. Risk behaviours can be assessed before, during and after the intervention period to assess the impact they may have had. This can be done with surveys as well as in-depth investigation of particular groups to help avoid respondent bias. A campaign for a month of ‘safe sex/no sex’ would also produce easily verifiable data with regard to adherence, evidenced in the number of births occurring nine months after the campaign. Finally, in theory, the average HIV viral load in the population could also be monitored before, during and after the period of abstinence to see how much it impacted on infectiousness, and to get better estimates of effectiveness in practice over modelling efficacy calculations. However, this might require very large sample sizes to show significant results.

**DISCUSSION**

A population-wide ‘month off’ from risk behaviour may help to interrupt the spread of HIV by allowing the acute infection period to pass and the HIV viral load to fall before risk activity is resumed. The month of Ramadan may provide one example of this that has unknowingly been protective for Muslim societies.

We investigated whether there were other opportunities for abstinence from particular practices similar to Ramadan through a review of major world religions. We did not find examples of sustained population-wide abstinence from sexual activity outside of Islamic societies. Small groups might do so, however, such as the Marange Apostolic sect in Zimbabwe’s Manicaland, who were found to abstain from sex during Passover (and also found to have lower prevalence of HIV than surrounding populations).14,15 However, many religions do incorporate some form of abstinence or asceticism – whether it is the Christian Lenten restrictions for 40 days, the Hindu Brahmacharya practices (where some young men restrict sexual activity)16, or Buddhist general notions of self-restraint including life-long dietary restrictions. What is critical about periods such as Lent and Ramadan, however, is that they provide clear, extended time periods into which a campaign promoting abstinence from sexual risk behaviour might be incorporated.

While converting people to a religion is not a reasonable public health strategy, these insights do raise the possibility of campaigns to regularly, if only temporarily, reduce risk behaviour across a population. The World Health Organization, for instance, has promoted ‘tobacco-free’ days.17 In this vein, key HIV risk behaviours can be targeted in populations. A ‘safe sex/no sex’ campaign for a limited period of time may be a reasonable public health intervention strategy to attempt in some settings.

In hyper-epidemic countries in particular, policy makers, populations and politicians are open to new ideas to address the epidemic. Prevalence rates and incidence rates are at unacceptably high levels and to be successful interventions take time and require long-term behaviour change. The ‘safe sex/no sex’ campaign has the advantage of requiring a one-off short-term adaption, being relatively cheap, having nation-building qualities, and not carrying stigma. Finally, many elements can be easily monitored.

While universal permanent abstinence from sex work may be impossible to achieve, a month of ‘no commercial sex’ or ‘no new partners’ might be more possible in some populations in which sex work appears to be a driving influence on spread (mining communities in southern Africa, for instance). Permanent monogamy may be a challenging long-term goal for some, but a
‘month of monogamy’ might be a useful starting point. It has rarely been attempted to put such ideas into practice, but they may reap significant benefits for HIV prevention.

REFERENCES
‘DIFFERENTIAL POVERTY RATES ARE RESPONSIBLE FOR THE RACIAL DIFFERENTIALS IN HIV PREVALENCE IN SOUTH AFRICA’: AN ENDURING AND DANGEROUS EPIDEMIOLOGICAL URBAN LEGEND?

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It is widely held to be axiomatic in South African epidemiological and social science circles that it is not worth comparing the risk factors underpinning the dramatic differences in HIV spread in South Africa’s racial groups, as these are all explained by corresponding differences in socio-economic status. The available evidence, however, suggests that HIV is not simply contoured along lines of socio-economic deprivation; rather, other – largely culturally determined – factors such as the practice and acceptance of multiple concurrent sexual partnerships play a key role. Comparison of sexual behaviours between South Africa’s different races supports the likelihood that cultural and not socio-economic factors are the mediators of differential racial HIV spread. Finally, it is argued that the failure of many South African experts in the study of HIV to consider race as a valid variable for analysis, and allied to this their continued exaggeration of the importance of socio-economic rather than cultural factors, has contributed to the relative failure of our national AIDS strategy.

With the aim of presenting an overview of the key literature that analyses the relationship between class, race, culture and HIV in South Africa, a literature review was conducted using Pubmed and Google Scholar to search for the following key words: ‘South Africa’, ‘socioeconomic status’, ‘socioeconomic’, ‘poverty’, ‘wealth’, ‘education’, ‘HIV prevalence’, ‘HIV risk’ and ‘sexual behaviour’.

THE ARGUMENT THAT CLASS DETERMINES RACIAL DIFFERENCES IN HIV PREVALENCE

A salient feature of the literature on this topic is how commonly it is assumed (with little or no substantiating evidence) that racial differences in HIV rates in South Africa can all be explained by socio-economic differentials. According to one of the premier textbooks on HIV/AIDS in South Africa, the reason HIV prevalence rates differ between races is that ‘marginalisation and discrimination on the basis of race and/or ethnicity are key factors influencing vulnerability to HIV infection’ (p. 63). Similarly, Mitton’s paper entitled ‘The sociological spread of HIV/AIDS in South Africa’ argues that AIDS is ‘primarily an illness of marginalised persons’ and hence has spread faster among black Africans due to their marginalised position in apartheid society. No evidence is provided in either of these two pieces to back up these claims.

A more convincing argument is that HIV is a disease of poverty and inequality, and black Africans’ ongoing state of economic deprivation (both relative and absolute) is the underlying determinant of the racial divergences in HIV rates. In many of the articles that make this argument no empirical evidence is provided. As an example, McCoy et al. claim without any supporting evidence that ‘critically the profound link between AIDS and poverty must be recognised and broken [in dealing with South Africa’s HIV epidemic]’.

An urban legend can be defined as ‘a story or anecdote that is based on hearsay and widely circulated as true’. Characteristically, when the storyteller is questioned as to the evidence backing up the story they claim that there were eye-witnesses, but when pressed it emerges that these were friends of friends. In a similar vein, one of the striking features of the above-quoted papers is how they either present no evidence or references
to back up their claims or else refer to other papers that have no empirical data to substantiate their assertions.

An exception to this is a paper by Fassin and Schneider,¹⁰ which argues that ‘social inequalities in income and employment status’ are, together with sexual violence and enhanced mobility, the three social factors responsible for the magnitude of South Africa’s epidemic. They provide evidence to back up the assertion that ‘social inequalities in income and employment status are powerful predictors of HIV infection’ in the form of a study in a mining company that stratified HIV status by race and occupational status (Fig. 1). The authors claim that the higher HIV rates in blacks than whites, and in the unskilled versus the skilled job categories, are ‘the legacy of centuries of colonial exploitation and racial segregation, culminating in the institution of apartheid in the second half of the 20th century’. Their argument is that ‘epidemiologically this segregation translates as differential HIV seroprevalence between black and white groups and between social classes’. They do not, however, comment on why the HIV rate within each occupational stratum is so much higher in the black than the white workers. As an example, within the lowest job category, the HIV rate is five times higher in blacks than whites. The original authors of the study note that this patterning does not support the hypothesis that socio-economic differentials determine racial differences in HIV.¹¹

One of the most compelling proponents of the poverty-inequality thesis is the anthropologist Mark Hunter. He too is unable to provide much empirical evidence to back up his engaging ethnographic material. One of the few pieces of quantitative evidence he does advance is that HIV incidence and prevalence rates are higher in informal than formal settlements in South Africa.¹² This assertion is based on the 2005 Human Sciences Research Council (HSRC) HIV survey.¹³ There is, however, not much one can conclude from the fact that HIV prevalences in formal and informal urban settlements are 9% and 17% respectively, when no attempt is made to control for the fact that race (which was itself strongly correlated with HIV status) co-varies with type of urban settlement.

**How is HIV Contoured Along the Lines of Race and Class in South Africa?**

Johnson, Budlender and Kirk have undertaken much more thorough analyses of the relationship between income, race and HIV. Kirk¹⁴ analysed South Africa’s national antenatal clinic HIV survey data to try to tease out the relationship between income, race and HIV. Unfortunately the antenatal survey does not collect information about income, but Kirk was able to use other data sources to show that the level of poverty in a magisterial district is negatively associated with the HIV prevalence among women attending antenatal services in that district. This finding was backed up by his analysis, which found that women with no education are at a lower risk of HIV infection than women who received high-school education (women with university education had the lowest HIV rates). Johnson and Budlender’s review of this topic demonstrates some of the complex ways in which race, class and culture interact to produce South Africa’s HIV epidemic.¹¹ One of these pieces of evidence is their presentation of a multivariate logistic regression analysis of the antenatal clinic data to reveal that racial differences persist despite controlling for socio-economic status (which was done here by using education level) (Table I).

**Table I. Odds Ratios for HIV Infection in Different Race Groups Based on a Multivariate Analysis of the 1998 and 1999 HIV Antenatal Survey Data¹¹**

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>African</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Asian</td>
<td>0.23</td>
<td>0.05</td>
</tr>
<tr>
<td>Coloured</td>
<td>0.17</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>White</td>
<td>0.13</td>
<td>&lt;0.001</td>
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</tbody>
</table>

Three more recent studies from South Africa have confirmed the finding that HIV is not simply a disease of poverty. Using a cohort study of 3 881 individuals in eight villages in rural South Africa between 2001 and 2004, Hargreaves *et al.* were able to show that there was no association between HIV incidence and household wealth for the men and women.¹⁵ Less educated women did, however, have a higher rate of infection. In the second study, Barnighausen *et al.* used data from a longitudinal HIV surveillance and linked demographic surveillance in rural KwaZulu-Natal to test the relationship between socio-economic status, education and HIV incidence.¹⁶ HIV incidence was found to be related to household wealth – with the incidence lowest in the low- and high-wealth brackets and highest in the middle-income bracket. Education level in this study was found to be associated with a lower risk of acquiring HIV. Likewise, the Carltonville Project found no difference in HIV prevalence between the employed and the unemployed.¹⁷ Finally, a cluster randomised
trial designed to evaluate the impact of a microfinance lending scheme to evaluate the impact of a microfinance lending scheme on HIV incidence found it had no impact despite improving the economic wellbeing of the participants.18

There is conflicting evidence regarding the extent to which HIV knowledge or risky behaviour varies by socioeconomic status. A multivariate study using data from the 1998 South African Demographic and Health Survey found ‘little evidence that poverty is associated with risky sexual behaviour’. Poorer women were, however, slightly less likely to have the necessary knowledge about HIV.19 In contrast, Hallman, using household survey data from 14 - 24-year-olds in KwaZulu-Natal, showed that among females but not males low wealth is associated with earlier sexual debut, having had multiple sexual partners in the year before the survey, and lower chances of condom use at last sex.20

One of the reasons why South Africans are still debating whether HIV is or is not a disease of poverty may relate to the poor quality of our national surveys. This is illustrated by the way that good-quality evidence from elsewhere in Africa has established that ‘HIV infection does not disproportionately affect the poorer in sub-Saharan Africa’.21 This was the title of a paper that published the results of eight national HIV-serolinked demographic studies, from Kenya,22 Tanzania23 and Burkina Faso,24 have produced similar results. Three other HIV-serolinked demographic studies, from Kenya,22 Tanzania23 and Burkino Faso,24 have produced similar results (Fig. 2). A review article from the ‘Poverty, Wealth and HIV’ supplement in the journal AIDS showed that among females but not males low wealth is associated with earlier sexual debut, having had multiple sexual partners in the year before the survey, and lower chances of condom use at last sex.20

Fig. 2. HIV prevalences for males and females by wealth quintiles in Tanzania.25

So what do the equivalent South African sero-surveys tell us about the relationship between HIV, wealth, race and sexual behaviours in South Africa? Remarkably little. The HSRC is the only body that has received funding to conduct nationally representative serolinked surveys of all South Africans. It has conducted three such surveys, in 2002, 2005 and 2008. By tracking knowledge, sexual behaviours and HIV prevalence, the HSRC surveys are supposed to be South Africa’s flagship surveys to track progress in dealing with our epidemic. Unfortunately, the surveys fail to a considerable extent on all three accounts. Knowledge about HIV and its prevention, we are told, has declined from 2002. It is, however, hard to interpret what this means, given the ambiguities associated with one of the two questions assessing HIV knowledge: ‘To prevent HIV infection, a condom must be used for every round of sex?’ If a mutually monogamous couple with no recent other relationships has undergone couple HIV testing and both are negative, they would be quite correct to answer ‘no’ to this question. According to the HSRC they would score zero for this answer. Sexual behaviours are tracked, but nowhere in any of the HSRC surveys is sexual partner concurrency (arguably the key risk factor in our setting) evaluated in any way. In the last survey we are informed that the percentage of persons who had more than one sexual partner in the past year is ‘a factor contributing to concurrent sexual partnerships’ (p. 41). This factor is then used as a surrogate for concurrency. No evidence is provided to back up this assumption.

Arguably the most marked inadequacy in the three HSRC surveys is how poorly the epidemic is mapped. Sexual behaviour surveys in the USA, such as the National Health and Social Life Survey (NHSLS), have found that ‘the vast majority of sexual partnerships originate within tightly circumscribed social settings, resulting in partnerships involving persons with similar characteristics’ (p. 255).26 Most sexual partnerships and marriages therefore occur within the same racial/ethnic, class, age and religion categories. This effect is strongest for race/ethnic group. The NHSLS found that 91% of short-term relationships and 93% of marriages were between persons of the same racial/ethnic group. It would be very useful to know if this is the case, as it seems likely, in South Africa, but this kind of basic information was not assessed in the HSRC surveys. For similar reasons, the HSRC surveys are unable to break the epidemic down by socio-economic status or education levels – except to show that HIV rates are higher in informal than formal settlements. In their current format our surveys are simply not able to answer the most basic questions such as the relationship between HIV, income and race. In fact, race seems an almost taboo variable in the surveys. At no stage, for example, are sexual behaviours compared between racial groups. In the 2008 survey, there is only one place in the 120-page report where HIV rates are broken down by race – in a small table in Appendix A, where overall HIV rates in each racial group are presented.
If we cannot explain South Africa’s racial differences in HIV by economic differentials, then how can we? An obvious, if rather simplistic, way to examine this question is to compare sexual behaviours between the races premised on the fact that HIV is spread by sex and more specifically via sex networks. Comparing sex networks is especially important, since differences in network structure are more likely to explain large differences in HIV rates than individual level differences. Network level differences, for example, have been shown to explain a third of the difference in sexually transmitted infections between races in the USA. We were unable to find a single published study that makes a comprehensive comparison of sexual behaviours in different racial groups in South Africa. We therefore conducted an analysis of a representative sample of 3,531 14–25-year-old Cape Town inhabitants in the Cape Area Panel Survey (CAPS). Individual level behavioural risk factors did not vary much by race (in fact, the lifetime number of sexual partners was highest in the white group). However, this was not the case for network factors. Blacks were much more likely to have engaged in concurrency themselves or to have a partner who engaged in concurrency (Table II). Various lines of evidence have supported the importance of concurrency in HIV spread in this area. Numerous epidemiological studies have shown a strong link between partner concurrency and the incidence of sexually transmitted infections. The most compelling difference in sexual behaviours between high- and low-prevalence HIV countries globally is that sexual partner concurrency is far more prevalent in the high-incidence countries of southern and eastern Africa. Modelling exercises have shown that the key way concurrency increases HIV transmission is at a network level, where it increases the network interconnections in a manner that creates ‘superhighways’ for HIV spread. In this way concurrency increases HIV transmission exponentially – even if the number of sex partners does not increase.

What then are the underlying reasons for the racial differences in sexual behaviour in South Africa – in this case, the elevated concurrency rates in blacks? Two main categories of factors have been advanced as being important in the promotion of high concurrency rates – cultural and socio-economic factors. In a separate study looking at the determinants of concurrency in the CAPS dataset, we found that the relationship between income quintile and concurrency found on univariate analysis disappeared on multivariate analysis. In addition, when we broke concurrency rates down by income quintile for each race and gender, there was no relationship between concurrency and income in any of these groups. This supports the view that, as in Uganda, it is cultural factors which are responsible for the high concurrency rates. Indeed, the ‘10 Countries’ study found that a crucial factor underpinning high concurrency rates in the 10 countries in southern and eastern Africa was that it was regarded as normative for men to have multiple concurrent partners.

It is important to acknowledge three important caveats to the findings presented here. Firstly, the analyses presented have attempted to ascertain the relationship between poverty and HIV. No studies in South Africa that we are aware of have examined the role of socio-economic inequalities in HIV spread. Secondly, we cannot exclude the possibility that high poverty rates over generations may have had an effect on producing a set of enduring norms pertaining to sexual behaviour in blacks which, due to its population level effect, applies as much to wealthier blacks. This would mean that analyses such as our CAPS data, which controlled for wealth using contemporary levels of wealth, are unable to discern this legacy-of-poverty effect. Thirdly, there is good evidence that the HIV epidemic is following the pattern of many other behaviour-related diseases (such as smoking-related ones) which were more prevalent among the wealthy in the early stages, but became more prevalent among the poor as knowledge of the ill effects gathers.

**SHOULD WE DOWNPLAY WHAT IS PSYCHOLOGICALLY PAINFUL?**

The HSRC Survey of 2005 revealed HIV prevalences of 19.9%, 3.2% and 0.5% for 15–49-year-old blacks, coloureds and whites, respectively. The racial differ-

**TABLE II. CONCURRENCE RATES BY RACE AMONG 14–25-YEAR-OLD CAPETONIANS**

<table>
<thead>
<tr>
<th>Partner engaged in concurrency</th>
<th>Blacks (%)</th>
<th>Coloureds (%)</th>
<th>Whites (%)</th>
</tr>
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<tbody>
<tr>
<td>Any partner definitely or possibly had concurrent partner</td>
<td>68.2</td>
<td>34.9</td>
<td>25.9</td>
</tr>
<tr>
<td>Interviewee has had two sexual relationships simultaneously at some stage</td>
<td>30.1</td>
<td>10.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Respondents who have had 1, 2 or ≥3 concurrent relationships:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>19.1</td>
<td>5.9</td>
<td>4.5</td>
</tr>
<tr>
<td>2</td>
<td>7.2</td>
<td>1.3</td>
<td>0.6</td>
</tr>
<tr>
<td>≥3</td>
<td>2.0</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Concurrently concurrent</td>
<td>15.3</td>
<td>2.7</td>
<td>1.3</td>
</tr>
<tr>
<td>More than one partner had a concurrent relationship</td>
<td>10.8</td>
<td>3.1</td>
<td>2.4</td>
</tr>
</tbody>
</table>
ences in HIV within South Africa are therefore similar in magnitude to those between the highest and lowest prevalence countries in the world. Finding the underlying determinants for these differences should therefore provide us with important clues as to the nature of the ‘holy grail’ in South African HIV research – what we need to do to stop the scandalously high current incidence rates. According to recently published data from a surveillance site in rural KwaZulu-Natal, 3.4% of adults acquired HIV during 2008, and this incidence rate has not declined at all over the past 5 years.29 Our investigations along these lines provided strong support for the view that a (largely) culturally driven practice of concurrency was the likely key factor responsible for the elevated HIV rates seen in blacks. Although at the 4th SA AIDS Conference there was considerable interest in dealing with multiple concurrent partnerships, there still remains an embarrassing paucity of evidence that has been generated in South Africa on the link between concurrency and HIV transmission, and on the cultural and other factors responsible for our high concurrency rates.

As described above, part of the reason for this has been a peculiar reluctance to use race as an analytical variable as regards to HIV. The origins of this racial blind spot are not hard to fathom. Concepts of white racial and cultural superiority were central to the ideology of apartheid. Thabo Mbeki would later characterise this ideology as one where black people were made to feel ‘their inferiority by being reminded of their role as germ carriers … [and attend] schools where they learn a history that pictures black people as human beings of a lower order, unable to subject passion to reason.40 Given this background, when, in the early days of the new non-racial dispensation, a new and lethal disease that was sexually transmitted was found to disproportionately affect black South Africans, it should not be too surprising that the investigating experts biased their assessments of aetiology towards socio-economic factors. To suggest that cultural practices were responsible might have sounded at best insensitive and at worst racist. An example of these dynamics is a book published earlier this year by a respected South African author that was sexually transmitted was found to disprove its followers than about the differential HIV spread it was capable in a short space of time to undergo a process of painful introspection which correctly identified and successfully targeted the practices of multiple concurrent partnerships that were fuelling the epidemic.44 It is surely time for South Africa to rectify this blind spot and venture into the psychologically painful but productive places that Uganda did decades ago. One of the reasons why urban legends are believed and spread is because they construct and reinforce the conceptual framework of the group within which they are told. It is interesting to note how a country without this legacy of race-based conflict, such as Uganda, was able in a short space of time to undergo a process of psychological space in common with urban legends, but as with urban legends, its spread reveals more about the psychologies of its followers than about the differential HIV spread it purported to explain.

REFERENCES
GUIDELINES

CHANGES TO THE ART GUIDELINES – AN OVERVIEW

Celicia Serenata
South African National AIDS Council Secretariat

In 2009 the South African National AIDS Council (SANAC) Treatment Technical Task Team (TTT) finalised recommendations for changes to the national standard treatment guidelines for adult and paediatric management and treatment, as well as changes in the prevention of mother-to-child transmission of HIV (PMTCT) guidelines, moving away from monotherapy to dual therapy. President Zuma announced changes in the national antiretroviral therapy (ART) programme on World AIDS Day 2009. Subsequently additional changes were made to the treatment guidelines to be in line with these new Presidential mandates, which came into effect on 1 April 2010.

The purpose of the changes to the guidelines is not just to meet the Presidential mandates, but also to bring the guidelines in line with international recommendations and ensure the use of more efficacious drugs, including the phasing out of stavudine from the national ART programme. Electronic versions of the treatment guidelines are available on the SANAC website (www.sanac.org.za). The following is a brief summary of the key changes.

**PRIORITY GROUPS**

Owing to the high cost associated with ART, and the high burden of people in need of ART in South Africa, eligibility criteria have been adapted only for priority groups. These are:

- HIV-infected pregnant women
- HIV-infected infants
- People with both tuberculosis (TB) and HIV infection
- People with multidrug-resistant (MDR) or extensively drug-resistant (XDR) TB.

**ELIGIBILITY TO START ART**

- CD4 count <200 cells/µl, irrespective of clinical stage, OR
- CD4 count <350 cells/µl in patients with TB/HIV co-infection, or pregnant women, OR
- WHO stage 4 disease, irrespective of CD4 count, OR
- MDR/XDR TB, irrespective of CD4 count.

In addition, certain patients are fast-tracked to be initiated on ART, which means they should be started within 2 weeks of receiving their CD4 result and choosing to start lifelong ART:

- Pregnant women
- Patients with a CD4 count below 100 cells/µl
- Any patient with WHO stage 4 disease
- Any patient with MDR or XDR TB.

**NATIONAL REGIMENS**

National regimens for children and adolescents are set out in Table I.

National regimens for mothers and infants are set out in Tables II and III.

**NATIONAL REGIMEN FOR INFANTS**

**CHILDREN**

For children, eligibility criteria to start ART are:

- All children under 1 year of age, irrespective of CD4 level
- Children between 1 and 5 years with clinical stage 3 or 4, or a CD4 percentage of 25 or below, or an absolute CD4 count under 750
- Children over 5 and up to 15 with clinical stage 3 or 4, or CD4 350 and below.

The first-line regimens for children are:

- Infants and children under 3: abacavir + lamivudine + lopinavir/ritonavir
- Children 3 and older: abacavir + lamivudine + efavirenz.
If a child is currently on a stavudine-based regimen, and is not experiencing any side-effects, the regimen should be maintained. Substitutions are only made once lipodystrophy is suspected.

The second-line regimens for children are:
- Children 3 and older: zidovudine + didanosine + lopinavir/ritonavir
- Children failing on the first-line regimen: zidovudine + didanosine + lopinavir/ritonavir

### TABLE I. NATIONAL REGIMENS FOR CHILDREN AND ADOLESCENTS

<table>
<thead>
<tr>
<th>First line</th>
<th>Regimen</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>All new patients needing treatment</td>
<td>TDF + 3TC/FTC + EFV/NVP</td>
<td>For TB co-infection EFV is preferred For pregnant women or women of child-bearing age, not on reliable contraception, NVP is preferred</td>
</tr>
<tr>
<td>Currently on d4T-based regimen with no side-effects</td>
<td>d4T + 3TC + EFV/NVP</td>
<td>Remain on d4T if well tolerated Early switch with any toxicity Substitute TDF if at high risk of toxicity (high body mass index, older, female, TB treatment)</td>
</tr>
<tr>
<td>Contraindication to TDF: renal disease</td>
<td>AZT + 3TC + EFV/NVP</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second line</th>
<th>Regimen</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failing on a d4T or AZT-based first-line regimen</td>
<td>TDF + 3TC/FTC + LPV/r</td>
<td>Virological failure must be followed by intensive adherence management If repeat viral load remains &gt;1 000 in 3 months despite adherence intervention, switch</td>
</tr>
<tr>
<td>Failing on a TDF-based first-line regimen</td>
<td>AZT + 3TC + LPV/r</td>
<td>Virological failure must be followed by intensive adherence management, as re-suppression is often possible If repeat VL remains &gt;1 000 in 3 months despite adherence intervention, switch.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Salvage therapy</th>
<th>Regimen</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failing any second-line regimen</td>
<td>Specialist referral</td>
<td>Intensively explore and address issues relating to causes of non-adherence If VL remains high, refer where possible, but maintain on failing regimen</td>
</tr>
</tbody>
</table>

### TABLE II. NATIONAL REGIMEN FOR MOTHERS

<table>
<thead>
<tr>
<th>Woman</th>
<th>Regimen</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible for lifelong ART (i.e. CD4 ≤350/µl or WHO clinical stage 3 or 4)</td>
<td>TDF + 3TC/FTC + NVP</td>
<td>Start lifelong ART within 2 weeks</td>
</tr>
<tr>
<td>Currently on lifelong ART</td>
<td>Continue ART</td>
<td>Substitute EFV with NVP if in first 12 weeks of pregnancy</td>
</tr>
<tr>
<td>Contraindication to TDF (renal disease)</td>
<td>AZT + 3TC + NVP</td>
<td></td>
</tr>
<tr>
<td>Not eligible for ART, i.e. CD4 &gt;350/µl and WHO stage 1 or 2</td>
<td>AZT from 14 weeks sdNVP + AZT 3-hrly in labour TDF + FTC single dose (stat) post-delivery</td>
<td>Assess maternal ART eligibility before discharge</td>
</tr>
<tr>
<td>Unbooked and presents in labour</td>
<td>sdNVP + AZT 3-hrly in labour TDF + FTC single dose post-delivery</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE III. NATIONAL REGIMEN FOR INFANTS

<table>
<thead>
<tr>
<th>Infant</th>
<th>Regimen</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother on lifelong ART</td>
<td>NVP at birth and then daily for 6 weeks irrespective of infant feeding choice</td>
<td>If formula fed, baby can stop NVP at 6 weeks</td>
</tr>
<tr>
<td>Mother on PMTCT</td>
<td>NVP at birth and then daily for 6 weeks continued as long as any breastfeeding</td>
<td>Assess ART eligibility for the mother-including 6 weeks</td>
</tr>
<tr>
<td>Mother did not get any ARV before or during delivery</td>
<td>NVP as soon as possible and daily for at least 6 weeks continued as long as any breastfeeding</td>
<td></td>
</tr>
<tr>
<td>Unknown maternal status because orphaned or abandoned</td>
<td>Give NVP immediately Test infant with rapid HIV test. If positive, continue NVP for 6 weeks. If negative, discontinue NVP</td>
<td>Follow-up 6-week HIV DNA PCR</td>
</tr>
</tbody>
</table>
Children failing on the zidovudine or didanosine-based regimen: abacavir + lamivudine + lopinavir/ritonavir

HIV-INFECTED PREGNANT WOMEN WITH CD4 ABOVE 350
These women follow the new national PMTCT guidelines, namely:

- Zidovudine from 14 weeks
- Single-dose nevirapine and zidovudine 3-hourly during labour
- Tenofovir and emtricitabine single-dose after delivery.

If a woman presents in labour without having started either ART or the PMTCT regimen at 14 weeks, she should still receive the single-dose nevirapine and zidovudine 3-hourly and tenofovir and emtricitabine as per above.

FINAL COMMENTS
Even though these guidelines are focused on the public sector, it is hoped that they will also be adopted in the private and NGO sectors. Implementing these new guidelines would not just be of immediate benefit to the patient needing treatment. As has been shown in recent studies, patients on ART have a decreased viral load, and this impacts on HIV transmission. This meets the major objective of what President Zuma announced on 1 December 2009 – decrease mortality, and increase HIV prevention.
Almost all humans are latently IgG-seropositive for the double-stranded DNA human herpesvirus 5 named cytomegalovirus (CMV). CMV is an AIDS-defining World Health Organization (WHO) stage 4 opportunistic infection for both adults and children, seen when the CD4 T-cell count falls below 100 cells/µl and as an immune reconstitution syndrome after starting highly active antiretroviral therapy (HAART).

CLINICAL MANIFESTATIONS

Active CMV disease may present multi-systemically, with significant morbidity and mortality. Organ system manifestations include:

CMV retinitis (CMV-R). This is a visual emergency usually presenting with blurred vision, floaters, black spots, flashing lights, distortions, redness and photophobia, but sometimes asymptomatic. WHO clinical diagnosis guidelines for CMV-R include dilated pupil indirect fundoscopic identification of 'discrete patches of retinal whitening with distinct borders, spreading centrifugally, often following blood vessels, associated with retinal vasculitis, haemorrhage and necrosis' Figs 1 and 2 show CMV-R before and after local treatment, respectively. This fundoscopic picture is known as the 'pizza pie' appearance. CMV-R may result in blindness.

CMV of the gastro-intestinal tract. Colitis is symptomatic as chronic watery diarrhoea that may become bloody, and oesophagitis symptomatic as dysphagia, anorexia and weight loss. Hepatitis may occur, and there are reports of acalculous cholecystitis.

CMV adrenalitis. Adrenal insufficiency may manifest as postural hypotension, fatigue, hyperkalaemia, hyperkalaemia and acidosis. It has a high mortality rate.

CMV pneumonitis. Manifestations are tachypnoea, hypoxia and dry cough, which are commonly misdiagnosed as Pneumocystis jirovecii pneumonia.

Cytomegalovirus is a multi-systemic infection reactivated in the immunocompromised. Diagnosis and treatment are prohibitively costly in sub-Saharan Africa, and efforts need to be made for their price reduction to support the expanding highly active antiretroviral treatment programme in the region.
CMV of the neurological system. Encephalitis presents with headache, subacute personality changes, decreased concentration, and progressive dementia. Transverse myelitis may occur. CMV is a recognised cause of acute inflammatory demyelinating polyradiculopathy (Guillain–Barré syndrome), the hallmarks of which are rapidly progressive ascending and often asymmetrical paraesthesiae, sensory loss and areflexia, as well as urinary retention, constipation and incontinence. The cerebrospinal fluid may demonstrate polymorphonucleocytosis and raised protein, and the diagnostic method of choice is polymerase chain reaction (PCR) testing of the cerebrospinal fluid for CMV DNA.

SOUTH AFRICAN SPECTRUM OF DISEASE

Most data for CMV in the developed world were established in the 1990s, before the HAART era. CMV-R was found in a third of AIDS patients, with a large resulting burden of blindness. In one pre-HAART Swiss study of 48 patients, median survival after CMV retinitis was 6 months. HAART improved survival markedly in AIDS CMV-R patients.

There is a paucity of CMV data in the developing world. CMV has been called the ‘neglected disease of the AIDS pandemic’ because of poor diagnostic and treatment capability. In South Africa’s pre-HAART era, 90 AIDS patients were treated for CMV-R at the University of Natal over 7 years, and the incidence was noted to increase with time. A cross-sectional study screening all HIV-infected patients with CD4 counts <50 cells/µl in Khayelitsha, South Africa, diagnosed CMV-R in 2% of these patients using dilated pupil indirect ophthalmoscopy.

In South Africa has both a high burden of HIV disease and a large, expanding HAART programme. Many South African HIV-infected patients present for initiation of HAART when the CD4 count is less than 100 cells/µl, and often the median is less than 50 cells/µl, which makes them susceptible to CMV disease. The return to health and longevity that HAART confers shapes a powerful argument to treat CMV efficiently and prevent its debilitating effects.

DIAGNOSTIC OPTIONS

A variety of testing options exist to identify active systemic CMV infection (Table I). Viral culture is traditionally accepted as the ‘gold standard’ method of detection. Simpler and more rapid options are now proving as or more effective. The pp65 antigen assay can provide very sensitive results in less than 6 hours, the main drawback being the need for immediate sample processing after retrieval in order to ensure test validity. Serological tests for the presence of IgM and IgG antibodies may have little diagnostic value in the immunocompromised patient. CMV DNA-PCR tests provide sensitive results that can reproducibly quantify CMV viral loads. In HIV-infected patients, both DNA-PCR and pp65 antigen assay have proven to be more predictive in detecting CMV than serology or viral culture. The CMV pp67 mRNA test is a promising new method used in research settings.

TREATMENT: THE URGENT NEED FOR VALGANCICLOVIR PRICE REDUCTION IN SA FOR CMV TREATMENT IN HIV PATIENTS

CMV treatment strategies (Table II) include systemic as well as local products, the latter for ophthalmological indications. After completion of an induction phase, patients remain on maintenance therapy until immune recovery (CD4 >100 cells/µl).

Because southern African health facilities are poorly resourced, widespread use of intra-ocular ganciclovir (GCV) is not feasible. Specialist ophthalmological services are scarce in the state sector, and sometimes non-existent in rural areas. Intra-ocular GCV may not always be acceptable to patients, and is not without procedure-related adverse effects such as endophthalmitis. Most importantly, intra-ocular GCV does not prevent spread of CMV to the other eye, and completely fails to treat disseminated CMV.

Unfortunately, the exorbitant cost of systemic CMV treatments is prohibitive in the state sector. Systemic GCV necessitates a 3-week stay in hospital for intravenous induction, followed by oral maintenance GCV. Lengthy intravenous induction is not always realistic in resource-poor settings and may place
### TABLE I. CMV DIAGNOSTIC TESTS

<table>
<thead>
<tr>
<th>Test</th>
<th>Tube/transport</th>
<th>Samples</th>
<th>Volume required</th>
<th>Turnaround time</th>
<th>Price estimate (2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMV viral culture (shell vial)</td>
<td>No preservative Send on ice to arrive at lab and be processed within 24 hours</td>
<td>Urine, CSF aspirate, breastmilk Blood not an ideal sample</td>
<td>1 ml</td>
<td>2 - 7 d (state), 3 - 28 d (pvt)</td>
<td>R82 (state), R97.11 (pvt)</td>
</tr>
<tr>
<td>CMV pp65 antigen (IFA)</td>
<td>EDTA, room temperature, must be received at NICD before 14h00 same day as collection</td>
<td>Whole blood Result may be impossible if patient neutropenic</td>
<td>5 ml</td>
<td>1 - 3 d</td>
<td>R171 (state), R182.97 (pvt)</td>
</tr>
<tr>
<td>CMV IgG and IgM</td>
<td>Yellow-top</td>
<td>Blood (serum)</td>
<td>1 d</td>
<td>IgG R104.85 (pvt), IgM R113.76 (pvt)</td>
<td></td>
</tr>
<tr>
<td>Qualitative CMV DNA-PCR</td>
<td>EDTA</td>
<td>Any sample including blood, CSF, etc.</td>
<td>1 d</td>
<td>R607.14 (pvt)</td>
<td></td>
</tr>
<tr>
<td>Quantitative CMV DNA-PCR (i.e. CMV viral load)</td>
<td>EDTA</td>
<td>Whole blood</td>
<td>1 d</td>
<td>R1 214.18 (pvt)</td>
<td></td>
</tr>
</tbody>
</table>

pvt = estimated prices courtesy Toga Laboratories; state = estimated prices courtesy NHLS/NICD.

### TABLE II. CMV TREATMENT IN ADULTS

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Price estimates across sectors</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valganciclovir (Valcyte; Roche)</td>
<td>450 mg per tablet, 60 tablets per bottle</td>
<td>Initiation phase: 900 mg bd po with meals × 21 days R24 719.87 for 21 days R19 479.32 for 21 days</td>
<td>Specially imprinted price-reduced boxes can be ordered by NGOs from Roche Switzerland* Doubles ddl levels Monitor FBC 2 - 3 × week Discontinue if neutrophils &lt;0.5 ×10^9/L or platelets &lt;25×10^9/L. Adjust doses in renal failure</td>
</tr>
<tr>
<td>No generics currently available in South Africa</td>
<td>Maintenance phase: 900 mg/d po with meals until HAART restores CD4 count &gt;100 cells/µl R17 657.05 per month R13 913.85 per month</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Ganciclovir (Cymevene; Roche)</td>
<td>Induction phase: intravenous 5 mg/kg IV bd × 21 days R2 558.24 for 5 vials R1 789.65 for 5 vials</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Inj.: 500 mg in 10 ml vials ×5 Caps: 250 mg (84), 500 mg (90)</td>
<td>Maintenance phase: oral 1 g tds po Oral ganciclovir is not available in South Africa Suggest maintenance with valganciclovir</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>No generics currently available in South Africa</td>
<td>Local treatment for CMV retinitis In a recumbent patient, 2 mg of a 25 mg/ml ganciclovir solution in normal saline is injected with a 1 ml syringe and 30G needle, 4 mm behind the limbus of the eye superiorly with the patient looking down. Patients are given intravitreal ganciclovir injections twice a week for the first 2 weeks, then weekly until immune recovery or retinitis quiescence.9</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

*Minimum order of CHF 10 000. Each 60-tab box of 450 mg tablets costs CHF 500, plus freight and insurance changes apply (estimated CHF 177.40 + 40.20 respectively for a 26-box order) (CHF = Swiss franc, 1 CHF = 7.47309 ZAR, exchange rate at 1 June 2009). NGO orders can be placed only at Roche Basle (sandra.tomlini_cazzato@roche.com). The lead time is 3 months after receipt of firm order. Prices quoted are per Roche, May/June 2009.

FBC = full blood count; AZT = zidovudine.
immune-compromised patients at risk of contracting nosocomial illnesses.

The benefits of valganciclovir are evident: it is taken orally, easy to administer in resource-poor settings, well tolerated, and efficacious in both induction and maintenance phases of treatment. Its cost currently prevents its use in South African CMV AIDS patients.

Second-line intravenous treatment options such as foscarin and cidofovir are avoided because of nephro-toxicity.

PAEDIATRIC CMV TREATMENT AND PREVENTION IN PREGNANCY

Congenital CMV causes a broad range of neurodevelopmental deficits in both symptomatic and initially asymptomatic neonates, including microcephaly, chorioretinitis and sensorineural hearing loss.

A 6-week course of intravenous ganciclovir has been shown to be effective in preventing hearing loss, improving weight gain and head circumference, and resolving hepatic dysfunction, hepatomegaly and retinitis. Ganciclovir toxicity, especially neutropenia, can however be life-threatening.

Results of a small pharmacokinetic study show that oral valganciclovir at a dose of 16 mg/kg provided similar plasma levels of drug compared with 6 mg/kg intravenous ganciclovir, so it appears that valganciclovir is a promising option for treating neonatal and paediatric patients.

Vertical CMV transmission is trans-placental, and the rate is observed to be higher in HIV-1-infected mothers. Infants who are co-infected with HIV-1 and CMV are more likely to have rapid HIV disease progression.

Valganciclovir and ganciclovir are both considered potentially teratogenic from animal data, but there are no controlled studies in pregnant women.

A recent development in March 2009 is a CMV vaccine that may offer future public health benefits for pregnant women by eliminating CMV.

HOW CAN VALGANCICLOvir PRICE REDUCTION BE ACHIEVED IN SOUTH AFRICA?

Currently, the cost of CMV treatment makes it unaffordable to most.

Letters of concern on behalf of the South African HIV Clinicians Society have been sent to Roche urging price reduction of CMV treatments in the sub-Saharan African region. Various organisations internationally are lobbying for price reduction, including Médecins Sans Frontières, Universities Allied for Essential Medicines and the Clinton HIV/AIDS Foundation.

Valganciclovir for CMV treatment in AIDS patients must be placed on our state tender request list. Currently it is available through state discretionary funds to transplant patients only. Government should consider compulsory licensing for price-slashed generic production of valganciclovir for the state sector.

REFERENCES

Invited Comment

Cytomegalovirus can cause a wide spectrum of multi-systemic disorders including pulmonary disease, gastrointestinal disorders and disabling central or peripheral neurological dysfunction, as well as other manifestations that are well described by Laher et al. in their article. However, retinal disease is by far the most common clinical manifestation of CMV for patients with HIV, and this devastating condition has rightly been termed ‘the neglected disease of the AIDS pandemic’.

Cytomegalovirus retinitis (CMVR) is the most frequent cause of visual loss in individuals with AIDS, and before availability of HAART in the USA approximately 30% of patients with AIDS developed CMVR. Direct involvement of the optic disc and macula, retinal detachment and immune recovery-related phenomena can all complicate the condition, and may lead to visual impairment or blindness. A recent survey in Botswana suggests that up to 16.5% of individuals accessing HAART in a hospital setting have CMVR, in alignment with the findings of Visser, based in Durban. The high burden of HIV disease and the increasing scale-up of HAART provision in South Africa (with patients often initiating treatment at low CD4 counts) suggest that cytomegalovirus disease, whether ocular or systemic, will have a huge impact on HIV-related morbidity and mortality.

Detection of systemic CMV disease may need to be augmented by diagnostic laboratory tests, as outlined by the authors. However, retinal CMV disease is considered to have a characteristic appearance on ophthalmoscopy. Clinical examination of the fundus by indirect ophthalmoscopy is the gold standard for detection of CMVR, yet in many resource-limited settings the geographical and numerical maldistribution of ophthalmologists to HIV-affected individuals renders this an untenable situation. Furthermore, the cost of treatment is prohibitive, and intra-ocular injections for CMVR also require ophthalmic expertise.

As HIV clinicians and eye care professionals, we are in a position to curtail the ‘neglect’ of CMV – diagnosis and management of CMV infection, whether systemic or ocular, should be part of routine care. The development of novel strategies to train non-ophthalmologists to screen for CMVR means that ocular case detection may be possible even with decentralisation of HIV services to primary care levels. However, detection of CMV infection is just the first of many steps. A major obstacle faced in South Africa is the challenge of making treatment available, effective and affordable. We need to rise to the challenge and lobby for availability of economically priced treatment, otherwise we risk leaving our patients vulnerable to the scourge of CMV disease – and potentially a life filled with darkness.

Sophia Pathai
Clinical Research Fellow
International Centre for Eye Health
London School of Hygiene and Tropical Medicine

REFERENCES
Mosvold Hospital is situated in northern KwaZulu-Natal near the borders of Swaziland and Mozambique. According to estimates by the Department of Health, the hospital serves a population of about 108,000. The population is rural and poor, with adult unemployment at 60%. Five percent of households have piped water and 3.6% of households are supplied with electricity. Government health care in the Ingwavuma sub-district, in which Mosvold Hospital is situated, is provided by the hospital, 10 residential clinics and 3 mobile clinic teams. The hospital mortuary is the only government mortuary serving the Mosvold sub-district. Most deaths occurring in the sub-district, both within and outside the hospital, are certified by medical staff.

Antiretroviral drugs (ARVs) were first prescribed in September 2004 as part of the national antiretroviral roll-out programme. Table I shows the total number of patients started on ARVs from 2004 to 2008. The number of females started in each year was greater than the number of males, and from the beginning of the roll-out at least 11% of the patients enrolled were children.

In a previous study, an analysis of 4 years’ mortality data from 2003 to 2006 indicated that AIDS-related illnesses were responsible for 53% of deaths certified at the hospital during the period of the study. There was evidence of an increase in average age at death of women between 2005 and 2006, suggesting a positive impact of the ARV roll-out. The present analysis investigated the continuing impact of HIV/AIDS on mortality and life expectancy and observed trends over the period during which HIV treatment and prevention of mother-to-child transmission therapy (PMTCT) were introduced.

The use of nevirapine for PMTCT was commenced in 2002. Dual PMTCT, adding zidovudine to nevirapine, was started in April 2008.

### METHODS

Data from counterfoils of form 83/BI-1663, Notification/Register of Death/Stillbirths (Republic of South Africa, Department of Home Affairs), completed at Mosvold Hospital from January 2003 to December 2008, were entered into a database (Microsoft Access).
ETHICAL CONSIDERATIONS

The publication of statistics on the causes of death certified at Mosvold Hospital was approved by the Mosvold Hospital Ethical Committee.

RESULTS

Figs 1 and 2 show age at death in males and females according to HIV-related and non-HIV-related causes. Most deaths between the ages of 20 and 54 years are due to AIDS-related causes.

Table II shows the average age at death by year for males and females (>9 years) between 2003 and 2008 according to AIDS-related and non-AIDS-related causes. Average age at death for females declined between 2003 and 2005, and appeared to increase again from 2005 and 2007. The pattern for male deaths is less marked.

<table>
<thead>
<tr>
<th>Year</th>
<th>Males (each year)</th>
<th>Females (each year)</th>
<th>Total patients started per year</th>
<th>Cumulative total</th>
<th>Children &lt;15 yrs started per year</th>
<th>Cumulative number of children &lt;15 yrs</th>
<th>% children &lt;15 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>47</td>
<td>78</td>
<td>125</td>
<td>125</td>
<td>14</td>
<td>14</td>
<td>11.2</td>
</tr>
<tr>
<td>2005</td>
<td>198</td>
<td>324</td>
<td>522</td>
<td>647</td>
<td>62</td>
<td>76</td>
<td>11.7</td>
</tr>
<tr>
<td>2006</td>
<td>367</td>
<td>518</td>
<td>885</td>
<td>1 532</td>
<td>150</td>
<td>226</td>
<td>14.8</td>
</tr>
<tr>
<td>2007</td>
<td>397</td>
<td>691</td>
<td>1 088</td>
<td>2 620</td>
<td>170</td>
<td>396</td>
<td>15.1</td>
</tr>
<tr>
<td>2008</td>
<td>406</td>
<td>746</td>
<td>1 152</td>
<td>3 772</td>
<td>139</td>
<td>535</td>
<td>14.2</td>
</tr>
</tbody>
</table>

Table I. Patients started on antiretroviral drugs at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, from September 2004

Fig. 1. Total male deaths 2003 - 2008 certified at Mosvold Hospital, Ingwavuma, northern KwaZulu-Natal, grouped according to HIV/AIDS-related and non-HIV/AIDS-related causes of death.

Fig. 2. Total female deaths 2003 - 2008 certified at Mosvold Hospital, Ingwavuma, northern KwaZulu-Natal, grouped according to HIV/AIDS-related and non-HIV/AIDS-related causes of death.
Fig. 3 shows the trends in number of deaths certified at Mosvold Hospital for the 15 - 59-year age group and deaths attributable to AIDS-related causes. There is a 39% reduction in all-cause mortality and a 38% reduction in AIDS-related deaths in women and a 24% reduction in all-cause mortality in men with a 29% reduction in deaths attributable to AIDS.

**DISCUSSION**

The National HIV and Syphilis Survey South Africa in 2007 estimated the antenatal HIV prevalence for Umkhanyakude District to be 39.8%, an increase on the 2006 estimate of 36.3% and higher than the national estimate of 28%. High mortality from HIV/AIDS is consistent with these estimates.

In a survey of HIV infection prevalence in the southern part of Umkhanyakude District, near Mtubatuba, Tanser et al. found that HIV prevalence peaked at 51% in women in the 25 - 29-year age group and at 44% for men aged 30 - 34 years, which is consistent with the mortality patterns found in this study of a population in the same district.

In a report by Statistics South Africa entitled ‘Mortality and causes of death in South Africa, 2006,’ the proportion of deaths according to age group had a similar pattern to that found in this study, with peaks in the under-5, 30 - 34 and, for females, 75 - 79-year age groups. Deaths in the 15 - 59-year age group increased between 2002 and 2006, but with a decreasing annual increase between 2005 and 2006 compared with previous years.

The pattern of mortality according to age at death and cause of death in this study shows that HIV/AIDS is a leading cause of mortality in persons between the ages of 15 and 59, as well as causing substantial mortality in the under-5 age group. However, the decline in deaths in the 15 - 59 age group after 2005, mostly AIDS-related, combined with increased age at death since the

<table>
<thead>
<tr>
<th>Year</th>
<th>All causes Males</th>
<th>Average age at death</th>
<th>95% CI</th>
<th>All causes Females</th>
<th>Average age at death</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>All causes</td>
<td>47.5</td>
<td>45.8 - 49.2</td>
<td>48.5</td>
<td>46.6 - 50.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV/AIDS</td>
<td>39.4</td>
<td>38.0 - 40.8</td>
<td>35.1</td>
<td>33.7 - 36.5</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>All causes</td>
<td>45.6</td>
<td>43.9 - 47.3</td>
<td>45.3</td>
<td>43.5 - 47.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV/AIDS</td>
<td>38.8</td>
<td>37.5 - 40.1</td>
<td>36.2</td>
<td>34.9 - 37.5</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>All causes</td>
<td>45.9</td>
<td>44.2 - 47.6</td>
<td>44.1</td>
<td>42.4 - 45.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV/AIDS</td>
<td>37.9</td>
<td>36.5 - 39.3</td>
<td>35.9</td>
<td>34.6 - 37.2</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>All causes</td>
<td>45.6</td>
<td>43.8 - 47.3</td>
<td>47.7</td>
<td>45.8 - 49.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV/AIDS</td>
<td>38.7</td>
<td>37.2 - 40.2</td>
<td>35.4</td>
<td>33.9 - 36.8</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>All causes</td>
<td>47.54</td>
<td>45.7 - 49.4</td>
<td>50.01</td>
<td>48.0 - 52.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV/AIDS</td>
<td>39.62</td>
<td>38.1 - 41.2</td>
<td>37.17</td>
<td>35.5 - 38.8</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>All causes</td>
<td>47.31</td>
<td>45.3 - 49.3</td>
<td>49.06</td>
<td>46.8 - 51.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV/AIDS</td>
<td>40.62</td>
<td>38.7 - 42.6</td>
<td>35.1</td>
<td>33.4 - 36.8</td>
<td></td>
</tr>
</tbody>
</table>

CI = confidence interval.

**TABLE II. AVERAGE AGE OF DEATH IN PERSONS AGED >9 YEARS – DEATHS CERTIFIED AT MOSVOLD HOSPITAL, INGWAVUMA, KWAZULU-NATAL, JANUARY 2003 – DECEMBER 2008**
start of the ARV roll-out, suggests that roll-out may be reducing mortality from AIDS-related illness in the 15 - 59-year age group. The greater impact on female mortality compared with male mortality may be explained by the greater number of females compared with males enrolled onto ARV treatment.

REFERENCES
Coping is defined as ‘the cognitive and behavioral efforts made by an individual to alter or manage the problems caused by stressful situations’. The effectiveness of coping is associated with variables such as extent of social support, personality factors such as self-esteem and control, and rate of occurrence of stressful events. Individuals with active behavioural coping strategies are likely to have fewer mood disturbances, a better quality of life and a reduction in risk-taking behaviour, whereas individuals with inadequate and avoidant coping styles are likely to have higher levels of emotional stress and increased feelings of hopelessness or negative expectations.

The dynamics of hope are multifaceted and comprise a complex combination of ‘hope’, ‘despair’ and ‘hopelessness’. With hope, the individual fights against inability to cope and has the belief that life is worth living both in the present and the future. Despair is a downward process that results in being stuck in a situation, losing grip, sinking into a narrow existence, losing perspective of the future and questioning the possibility of hope. Hopelessness includes helplessly giving up everything (including hope) and living in emptiness in the face of an assumed non-existent future.

Hopelessness or negative expectation is among the psychological variables that are predictive of suicide. The patient misconstrues his or her experience in a negative way and anticipates serious outcomes for his or her problems. This sense of hopelessness may lead the person to believe that suicide is the only feasible strategy.
for dealing with seemingly insoluble problems. Beck et al., in a 10-year prospective follow-up study of 165 patients hospitalised with suicidal ideation, confirmed that hopelessness was predictive of actual suicide.

The prevalence of HIV and AIDS in South Africa has reached pandemic proportions. Living with HIV in a country where HIV is hugely stigmatised can be extremely stressful and causes mental suffering. The poorest sectors of society are most vulnerable and the consequences for them are most severe. Loss of income, additional care-related expenses and mounting medical fees push affected households deeper into poverty. The burden of coping often rests with women, who are faced with stepping up to a role as income-earners, mothers and caregivers. HIV has resulted in disintegration of family units and households.

The effectiveness of the coping abilities and styles individuals utilise to deal with the stresses of HIV greatly influences the psychological impact of this illness. Furthermore, the presence of co-morbid personality and adjustment disorders (which have an increased prevalence in the HIV-positive population) also impacts on coping abilities. Persons with these disorders are more likely to cope in a dysfunctional way.

There is evidence that hopelessness in individuals with HIV and AIDS may be associated with depression, which may lead to decreased adherence to medication regimes, further suppression of immunity and accelerated disease progression as well as risk of suicide. From a psychobiological perspective, active coping is associated with higher total lymphocyte, CD4 and natural killer cell counts, while a passive or fatalistic-resigned coping style and hopelessness are associated with poor HIV treatment adherence and rapid progression of HIV disease, particularly if they are associated with depression and occurrence of severe stressful events.

To measure hopelessness, Beck et al. developed the 20-item Beck's Hopelessness Scale (BHS), applied exploratory factor analysis and argued that the scale measures three specific components (affective, motivational and cognitive). The KR-20 coefficients (measures of the scale's internal consistency) range from 0.82 to 0.93. In general practice, the correlation between the BHS and ratings of hopelessness was 0.74 and in suicide attempters it was 0.62. The hopelessness construct is a factor in many mental disorders and is highly correlated with measures of depression and suicidal intent and ideation.

Much of the work on psychiatric morbidity in HIV has been published on the ability of individuals to cope with the illness. Furthermore, in South Africa HIV-infected patients may be at greater risk for psychopathology than patients in the developed world because of their potentially stressful living conditions. The aim of this report was to describe levels of hopelessness and associated factors in a group of stable, non-depressed HIV-positive patients receiving antiretroviral (ARV) therapy.

**METHODS**

The study was part of a larger prospective, randomised and controlled study designed to compare response to treatment, effects on immune markers and adherence to ARVs in patients with depression compared with those without depression. The sampling was a convenience sampling, as it included only patients attending the Perinatal HIV Research Unit clinic at Chris Hani Baragwanath Hospital, Johannesburg. Volunteers who were 18 years and older and medically stable and had been on antiretroviral therapy for more than 6 months were screened for possible inclusion in the study.

Thirty randomly selected non-depressed patients (according to Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) criteria) were included in the study. Depressive symptoms were determined using the Hamilton Depression Rating Scale (HAMD) (the higher cut-off score of 14 or more was regarded as indicative of a diagnosis of depression). Additional data (age, gender, marital status, employment status, level of education, number of children, and number of years since diagnosis of HIV) were obtained from all subjects, who also completed the BHS. The 20 true-false items of the BHS measured three major aspects of hopelessness, which was interpreted on the total scale score as follows: ≤3 minimal, and >3 significant.

The study was approved by the Committee for Research on Human Subjects, University of the Witwatersrand. For statistical analyses, the subjects were divided into two groups, those with a BHS score of ≤3 and those with a score of >3. Descriptive statistics were computed as means and frequencies (count and percentages). Comparisons were made between the two groups with regard to gender, marital status, employment status, number of children, level of education and number of years since diagnosis of HIV by the use of contingency tables (chi-square test with Fischer's exact test). Logistic regression was computed to determine any significant correlations between BHS scores and exposure variables. All analysis was done using the Statistical Package for Social Sciences 10.0 for Windows (SPSS Inc., Chicago, Ill.). A value of p<0.05 was considered significant.
RESULTS
The study population comprised 30 patients, with a mean age of 37.9 years (standard error (SE) 1.18) (range 28 – 51 years). All had acquired HIV infection through heterosexual contact and had disclosed their status to their partner or a significant member of their family. The majority of patients (63.3%) were on a nevirapine-based first-line regimen. Adherence to medication was good, with most patients virally suppressed and with a mean CD4 count of 405.37 cells/µl (SE 48.26). Clinically all the patients were non-depressed, and the mean HAMD score was 2.1 (SE 1.63) with a range from 0 to 5.

The mean BHS score was 4.03 (SE 0.55), with a range from 0 to 12 (Fig. 1).

Eighteen subjects (60%) scored 3 or less on the BHS, considered minimal levels of hopelessness. However, 12 (40%) scored more than 3, which is considered significant; of these 23% had scores of 7 or more. Comparisons between these two groups with respect to some variables are listed in Table I.

There were no statistically significant correlations between BHS scores of the study population and gender ($r$=-0.19, $p=0.313$), marital status ($r=0.33$, $p=0.071$), employment status ($r=-0.26$; $p=0.162$), level of education ($r=-0.22$; $p=0.240$), years since the diagnosis of HIV ($r=0.24$; $p=0.203$), or number of children ($r=0.11$; $p=0.567$). However, there was a trend indicating that subjects who were female, unemployed, married and/or had more children were more likely to experience higher levels of hopelessness.

There was no statistically significant association between BHS scores and gender ($p=0.184$), employment status ($p=0.769$), level of education ($p=0.933$), number of children ($p=0.933$), or number of years since diagnosis ($p=0.755$). However, patients who were married or living with partners were statistically more likely to score higher on the hopelessness scale compared with those who were single ($p=0.019$).

DISCUSSION
Although the sample was small, this study found that a significant proportion (40%) of a group of HIV-positive patients had mild to moderate levels of hopelessness as measured by the BHS, despite being medically stable, adherent to their antiretroviral medication and virally suppressed, and having high CD4 counts. Similar results of ‘mild’ feelings of hopelessness were reported by Remien et al. However, nearly all their patients maintained the conviction that good times lay ahead and that their lives were worthwhile.

This finding is of relevance because there is published evidence that hopelessness may play a key role in the

### TABLE I. FREQUENCY OF BECK’S HOPELESSNESS SCALE SCORES IN RELATION TO PATIENT VARIABLES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Study population (N=30)</th>
<th>BHS score ≤3 (N=18)</th>
<th>BHS score &gt;3 (N=12)</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6 (20%)</td>
<td>2 (6.7%)</td>
<td>4 (13.3%)</td>
<td>Fisher’s exact</td>
</tr>
<tr>
<td>Female</td>
<td>24 (80%)</td>
<td>16 (53.3%)</td>
<td>8 (26.7%)</td>
<td>$p=0.184$</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>18 (60%)</td>
<td>14 (46.7%)</td>
<td>4 (13.3%)</td>
<td>Fisher’s exact</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>12 (40%)</td>
<td>4 (13.3%)</td>
<td>8 (26.7%)</td>
<td>$p=0.01912$</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>9 (30%)</td>
<td>5 (16.7%)</td>
<td>4 (13.3%)</td>
<td>Fisher’s exact</td>
</tr>
<tr>
<td>Unemployed</td>
<td>21 (70%)</td>
<td>13 (43.3%)</td>
<td>8 (26.7%)</td>
<td>$p=0.769$</td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 0 - 7</td>
<td>2 (6.7%)</td>
<td>1 (3.3%)</td>
<td>1 (3.3%)</td>
<td>$\chi^2=0.139$; df 2; $p=0.933$</td>
</tr>
<tr>
<td>Grade 8 - 12</td>
<td>25 (83.3%)</td>
<td>15 (50%)</td>
<td>10 (33.3%)</td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>3 (10%)</td>
<td>2 (6.7%)</td>
<td>1 (3.3%)</td>
<td></td>
</tr>
<tr>
<td>No. of years since diagnosed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 5</td>
<td>11 (36.7%)</td>
<td>7 (23.3%)</td>
<td>4 (12.3%)</td>
<td>Fisher’s exact</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>19 (63.3%)</td>
<td>11 (36.7%)</td>
<td>8 (26.7%)</td>
<td>$p=0.755$</td>
</tr>
<tr>
<td>No. of children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>3 (10%)</td>
<td>2 (6.7%)</td>
<td>1 (6.7%)</td>
<td>$\chi^2=0.065$; df 2; $p=0.967$</td>
</tr>
<tr>
<td>1</td>
<td>10 (33.3%)</td>
<td>6 (20%)</td>
<td>4 (20%)</td>
<td></td>
</tr>
<tr>
<td>&gt;1</td>
<td>17 (56.7%)</td>
<td>10 (33.3%)</td>
<td>7 (33.3%)</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1. Histogram of Beck’s Hopelessness Scale scores.
prediction of suicidal behaviour.\textsuperscript{30} A high BHS score alerts the therapist to unstaed or denied suicidal inten-
tions. Remien \textit{et al.}\textsuperscript{21} reported that despite ‘mild’ feel-
ings of hopelessness and no current suicidal ideation, several of their patients considered suicide an option for the future should they become more impaired. In interpreting the results of the present study, hopeless-
ness may best be construed as a risk factor. However, unlike certain other predictors of suicide, such as age, sex, or race, hopelessness is a characteristic that can be modified. Given the relatively slow natural progres-
sion of HIV infection and the increased survival made possible by recent medical therapies, there should be a focus on interventions that promote the expression of negative feelings (i.e. anger) and the development of effective coping strategies that can significantly improve psychological status\textsuperscript{11} and possibly increase survival time.\textsuperscript{22} Failure to do this may mean that HIV-
positive subjects repress their feelings of anger and al-
leviate their discomfort by risk-taking behaviour such as unprotected sex, drug use and sharing needles.\textsuperscript{23}

Like the process of learning, which involves the forma-
tion of new connections between nerve cells in the brain, psychotherapy works by changing the way the brain functions. Certain types of psychotherapy, partic-
ularly cognitive-behavioural therapy (CBT) and inter-
personal therapy (IPT), can help improve coping skills. The aim of IPT is to solve problems within a brief period rather than devise lifetime solutions, and its emphasis is on restoring the patient to an adequate level of func-
tioning rather than on personality change.\textsuperscript{24} A study by Rush \textit{et al.}\textsuperscript{25} showed that depressed patients treated with cognitive therapy showed a more rapid reduction in hopelessness scores than a comparison group of de-
pressed patients treated with an antidepressant drug.

Although this study did not find any significant corre-
lation between feelings of hopelessness and previously reported stressors such as unemployment, having more children to care for and lack of support, there were suggestions of a trend towards this. The small sample size and the very select sample in this study may have contributed to this finding. Contrary to Remien \textit{et al.}\textsuperscript{21} finding that long-term survivors of HIV and AIDS were more resilient and positive in terms of their mood and outlook, our patients appeared to become more hope-
less with time. It is possible that we are not only fail-
ing to identify these feelings but do not provide any psychological support for persons expressing such feel-
ings at our ARV rollout clinics.

A possible objection to the use of the BHS in prediction of suicide is that it yields a large proportion of false positives. The almost inevitable over-inclusiveness of valid predictors of a rare phenomenon such as suicide was first demonstrated by Meehl and Rosen\textsuperscript{20} and has since been widely discussed.\textsuperscript{37-39} However, it should be noted that the connotations of the terms ‘false nega-
tive’ and ‘false positive’ may not be completely appro-
priate. Generally these terms are applied when a spe-
cific test is able or unable to demonstrate the presence or absence of a known disease, such as diabetes or tu-
berculosis. The BHS attempts to identify the potential for fatal suicide attempts and not the behaviour itself. Many persons with high scores on this scale may con-
tinue to be at risk for suicide beyond the observation period, even though they have not yet made a fatal suicide attempt.

\section*{CONCLUSION}

This small study suggests that hopelessness may be a common psychological distress reaction present in stable HIV-positive patients on ARVs that may go un-
detected. These feelings of hopelessness may result in an increase in risk-taking behaviour (e.g. unprotected sex, drug use, sharing needles) and attempted suicide. We recommend that the staff at ARV rollout clinics become aware of this possibility and use the BHS as a screening tool to identify such individuals and refer them for basic psychotherapy to improve coping skills and reduce feelings of hopelessness.

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\end{thebibliography}


The rate of HIV infection in pregnancy is high.\textsuperscript{1-7} There is evidence that HIV infection in pregnant women is associated with adverse maternal and fetal outcomes.\textsuperscript{2,5,6}

The effects of HIV infection include severe anaemia, infectious morbidities and vertical transmission.\textsuperscript{2,5,8-14} In a Malawian study, AIDS and anaemia were the leading causes of maternal mortality,\textsuperscript{15} and in Zaire maternal mortality rates in HIV-infected women were 10 times those of HIV-negative women.\textsuperscript{16} A personal communication revealed that in a recent unpublished report from a Nigerian Teaching Hospital, HIV/AIDS accounted for 20.2\% of maternal deaths.

However, the effect of pregnancy on HIV disease progression remains contentious. Evidence from developed countries suggests that pregnancy does not accelerate the progression of HIV disease,\textsuperscript{17-21} while reports from low-resource settings imply otherwise, indicating that pregnancy may influence the rate of disease progression.\textsuperscript{2} It has been suggested that other factors, including genetics, nutritional status and intercurrent infections, may be responsible for the rate of HIV disease progression in low-resource settings.\textsuperscript{2,22,23} John and colleagues report an association between CCR5 polymorphism and increased maternal mortality in a Kenyan cohort.\textsuperscript{23}

The objectives of the present study were to determine the association between pregnancy and biochemical and haematological changes in HIV-infected Nigerian women as a possible indicator of disease severity.
METHODOLOGY

This study was conducted in Central Hospital, Benin City, Nigeria, which provides tertiary care to patients in Benin City and its environs. It was a prospective study of two demographically similar cohorts of HIV-seropositive women, 154 pregnant and 151 non-pregnant. The cases were pregnant women attending the antenatal clinics of the hospital from October 2005 to October 2007. Once a pregnant case was identified, the next non-pregnant HIV-seropositive patient presenting to the HIV treatment, control and prevention programme unit of the hospital and matched for social class (patient’s educational status and husband’s occupation, location of residence, size of apartment, average weekly income, number and types of cars if any, types of electronic and electrical gadgets at home) was selected as a control. Any patient who experienced repeated attacks of malaria or other intercurrent infections was excluded from the study.

Upon recruitment, both pregnant and non-pregnant women had a data sheet completed that elicited information on socio-demographic variables, time since diagnosis of seropositive status, duration of antiretroviral therapy, and biochemical and haematological parameters. Specifically, the following biochemical measurements were done: serum electrolyte, urea and creatinine levels, serum fasting blood sugar (FBS), serum aspartate aminotransferase (AAT)/glutamic oxaloacetic acid transaminase (SGOT), alanine aminotransferase (ALT)/serum glutamic-pyruvic transaminase (SGPT), total bilirubin, serum amylase, serum cholesterol, very low-density lipoprotein (VLDL) and lactate dehydrogenase (LH). In addition, a full blood count (FBC - packed cell volume (PCV), white blood cell (WBC) count, platelet count and differentials) and CD4 cell count were performed.

The study was approved by the hospital’s Human Ethics Committee and was carefully explained to the patients, and only those who gave informed written consent were recruited into the study.

The Statistical Package for Social Sciences (SPSS) version 13 was used for the data management and statistical analysis, with Fisher’s exact test, the chi-square test or Student’s t-test (as appropriate) being used for comparison of the mean absolute values and standard deviations (SDs). The level of significance was 0.05.

RESULTS

The socio-demographic profile and time since diagnosis and commencement of treatment are set out in Table I. The pregnant women had had their HIV diagnosis for periods ranging from 1 to 30 months (median 10 months) and had been on treatment for periods ranging from 1 to 30 months (median 8 months), while the non-pregnant women had had their HIV diagnosis for periods ranging from 14 to 29 months (median 17 months) and had been on treatment for periods ranging from 2 to 29 months (median 16 months).

The median age of the pregnant women was 29.4 years, with a range of 18 - 36 years (mean 28.6, SD 4.6) and the median age of the non-pregnant women 30.2 years, with a range of 16 - 42 years (mean 29.2, SD 3.9). The median parity in the pregnant women was 1.00, with a range of 0 - 7 (mean 1.25, SD 1.59), and that for the non-pregnant women 2.00, with a range of 0 - 13 (mean 2.10, SD 2.29). This difference was statistically significant (p<0.0001). The median estimated gestational age at booking was 26 weeks, with a range of 2 - 42 weeks (mean 25.8, SD 8.13). In the pregnant

<table>
<thead>
<tr>
<th>Parameters</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Median</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>154</td>
<td>28.6 (4.2)</td>
<td>29.4</td>
<td>0.239</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>28.9 (4.1)</td>
<td>30.2</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>1.25 (1.59)</td>
<td>1.00</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>2.10 (2.29)</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>EGA at booking (wks)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>25.8 (8.13)</td>
<td>26.00</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Time since diagnosis (mo.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>10.27 (6.12)</td>
<td>10.00</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>16.86 (1.69)</td>
<td>17.00</td>
<td></td>
</tr>
<tr>
<td>Duration of treatment (mo.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>8.86 (5.99)</td>
<td>8.00</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>15.02 (3.82)</td>
<td>16.00</td>
<td></td>
</tr>
</tbody>
</table>

SD = standard deviation; EGA = estimated gestational age.
group a median of 10 months had elapsed since the diagnosis of HIV, with a range of 1 - 30 months (mean 10.27, SD 6.12), and in the non-pregnant group a median of 17 months had elapsed, with a range of 14 - 29 months (mean 16.86, SD 1.69). This difference was statistically significant (p<0.0001).

Serum electrolyte, urea and creatinine levels in cases versus controls are set out in Table II. The mean serum urea and potassium levels, though within normal limits, were higher in non-pregnant than pregnant women, as were the mean serum aspartate aminotransferase (AAT)/ serum glutamic oxaloacetic acid transaminase (SGOT), alanine aminotransferase (ALT)/ serum glutamic-pyruvic transaminase (SGPT) and serum amylase (Table III). However, the CD4 cell count was higher in the pregnant women than in the controls (p=0.001), while the haematological parameters were within normal limits and comparable between cases and controls (Table IV). Comparison of the mean CD4

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**TABLE II. COMPARISON OF MEANS OF SERUM ELECTROLYTE, UREA AND CREATININE LEVELS OF CASES V. COHORTS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>N</th>
<th>Mean (SD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium (mmol/l)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>139.36 (17.21)</td>
<td>0.260</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>142.00 (19.99)</td>
<td></td>
</tr>
<tr>
<td>Potassium (mmol/l)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>4.15 (0.65)</td>
<td>0.023</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>4.48 (0.96)</td>
<td></td>
</tr>
<tr>
<td>Urea (mmol/l)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>6.67 (9.81)</td>
<td>0.002</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>11.70 (14.70)</td>
<td></td>
</tr>
<tr>
<td>Creatinine (mmol/l)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>1.16 (1.44)</td>
<td>0.629</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>1.24 (1.26)</td>
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</tr>
</tbody>
</table>

**TABLE III. COMPARISON OF MEANS OF OTHER BIOCHEMICAL PARAMETERS OF CASES V. CONTROLS**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>N</th>
<th>Mean (SD)</th>
<th>p-value</th>
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</thead>
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<tr>
<td>FBS (mg/dl)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>79.67 (8.41)</td>
<td>0.808</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>91.00 (13.92)</td>
<td></td>
</tr>
<tr>
<td>AAT/SGOT (U/l)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>35.66 (35.28)</td>
<td>0.001</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>57.91 (68.17)</td>
<td></td>
</tr>
<tr>
<td>ALT/SGPT (U/l)</td>
<td></td>
<td></td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>17.29 (16.27)</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>27.68 (24.89)</td>
<td></td>
</tr>
<tr>
<td>Amylase (U/l)</td>
<td></td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>69.3 (37.86)</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>83.17 (45.36)</td>
<td></td>
</tr>
<tr>
<td>VLDL (mg/dl)</td>
<td></td>
<td></td>
<td>0.045</td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>67.79 (162.75)</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>31.58 (53.28)</td>
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</tr>
</tbody>
</table>

**TABLE IV. COMPARISON OF MEANS OF HAEMATOLOGICAL PARAMETERS OF CASES V. CONTROLS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>N</th>
<th>Mean (SD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD4 count (cells/µl)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>378.16 (272.57)</td>
<td>0.001</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>279.74 (230.74)</td>
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</tr>
<tr>
<td>Total WBC (×10⁹/l)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>5.64 (1.77)</td>
<td>0.304</td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>5.35 (2.81)</td>
<td></td>
</tr>
<tr>
<td>Lymphocytes (×10⁹/l)</td>
<td></td>
<td></td>
<td>0.920</td>
</tr>
<tr>
<td>Cases</td>
<td>154</td>
<td>2.15 (2.04)</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td>151</td>
<td>2.17 (1.96)</td>
<td></td>
</tr>
</tbody>
</table>
count, total WBC count and PCV in the three trimesters of pregnancy did not reveal any statistically significant differences in the respective values.

**DISCUSSION**

A systematic review and meta-analysis of seven cohort studies from 1983 to 1996 suggested that there is an association between adverse maternal outcomes and pregnancy in HIV-infected women. The summary odds ratios for the risk of an adverse maternal outcome related to HIV infection and pregnancy were 1.8 (85% confidence interval (CI) 0.99 - 3.3) for death, 1.41 (95% CI 0.85 - 2.33) for HIV disease progression, and 1.63 (95% CI 1.00 - 2.67) for progression to an AIDS-defining illness. This association appeared to be stronger in the one study in this group conducted in a resource-poor setting.2

The objective of the present study was to describe any biochemical and haematological differences in the plasma of pregnant and non-pregnant HIV-infected Nigerian women. In all women, the parameters assessed were within normal limits. The CD4 count was significantly higher in the pregnant compared with the non-pregnant controls, despite the fact that the non-pregnant women had been on antiretroviral drugs for longer.

Nutritional factors and intercurrent infections have been shown to play a role in disease progression in low-resource settings. These factors were controlled for in this study, as the two groups were matched for social class and women with intercurrent infections were excluded from the study. The prognosis for HIV disease in pregnancy is worse for patients with intercurrent infections such as malaria, urinary tract infections, sexually transmitted infections and parasitic infestation.2,34 Malnutrition, infections and infestations are generally widespread in low-resource settings.

In conclusion, this study failed to show any independent association between pregnancy and abnormal blood parameters that may suggest disease severity in HIV-infected Nigerian women. It is reasonable to suppose that any increased morbidity and mortality of pregnancy may be modulated through the combined effects of nutritional factors, intercurrent infections and genetic factors. Efforts to address these are likely to contribute to reducing the burden of HIV morbidity in infected pregnant Nigerian women.

**Conflict of interest.** We confirm that this study was self-funded by the authors and that the outcome is a true reflection and interpretation of the scientific findings and was in no way influenced by the authors. The work is original and it is not being considered for publication by any other journal.

**REFERENCES**

Two CPD points are awarded for the correct completion and submission of the questions below.

CPD questionnaires must be completed online via www.cpdjournals.org.za.

After submission you can check the answers and print your certificate.

Questions may be answered up to 6 months after publication of each issue.

This programme is available free of charge to members of the HIV Clinicians Society and SAMA only.

1. True (A) or false (B) – click on the correct answer:
   ART will be offered to adult patients with a CD4 count <200 cells/µl and an AIDS-defining illness.

2. True (A) or false (B) – click on the correct answer:
   ART will be offered only to adult patients with tuberculosis and CD4 <350 cells/µl.

3. True (A) or false (B) – click on the correct answer:
   Adult patients with multidrug-resistant tuberculosis are excluded from ART due to drug-drug interactions.

4. True (A) or false (B) – click on the correct answer:
   Children diagnosed with cryptococcal meningitis between the ages of 5 and 15 will be considered for ART when the CD4 count is below 350 cells/µl.

5. True (A) or false (B) – click on the correct answer:
   Children diagnosed with TB between the ages of 5 and 15 will be considered for ART when the CD4 count is below 350 cells/µl.

6. True (A) or false (B) – click on the correct answer:
   ART should be deferred in infants <12 months who have a CD4 percentage above 25.

7. True (A) or false (B) – click on the correct answer:
   D4T toxicity occurs most frequently in patients who have a high body mass index and are younger, male and/or on TB treatment.

8. True (A) or false (B) – click on the correct answer:
   Older men with lipodystrophy, reduced creatinine clearance and low BMI should preferentially receive tenofovir.

9. True (A) or false (B) – click on the correct answer:
   Pregnant women who do not need ART for their own health should commence AZT from the first month of pregnancy.

10. True (A) or false (B) – click on the correct answer:
    Pregnant women who are commencing ART for their own health may do so with EFV or NVP from the time of booking.

11. True (A) or false (B) – click on the correct answer:
    Ganciclovir can be given intra-ocularly instead of intravenous and oral therapy to treat cytomegalovirus retinitis.

12. True (A) or false (B) – click on the correct answer:
    Ganciclovir should be used cautiously with AZT since it has similar bone marrow toxicities.

13. True (A) or false (B) – click on the correct answer:
    Intravenous ganciclovir in pregnancy can reduce congenital abnormalities in HIV co-infected women.

14. True (A) or false (B) – click on the correct answer:
    CMV is a cause of transverse myelitis in HIV-infected patients.

15. True (A) or false (B) – click on the correct answer:
    In order to perform HIV testing, the provider must have signed written consent or he or she will be liable.

16. True (A) or false (B) – click on the correct answer:
    Feelings of hopelessness falsely predict suicide.

17. True (A) or false (B) – click on the correct answer:
    Depression in individuals with HIV/AIDS has not been found to affect adherence to medication regimens.

18. True (A) or false (B) – click on the correct answer:
    Valganciclovir can be used in the oral form to initiate and maintain CMV treatment in HIV CMV retinitis.

19. True (A) or false (B) – click on the correct answer:
    HIV has been shown unequivocally to be a disease of poverty.

20. True (A) or false (B) – click on the correct answer:
    There is no evidence that multiple concurrent partners are linked to higher rates of sexually transmitted infections.