

nam

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Roger Pebody
Guest Editor

in this issue

Following the progress of the Equality Bill through parliament meant I had to get to grips with the rather bizarre terminology that our government uses.

I must admit to being a little disappointed that there wasn't enough time for the bill to go through 'ping pong' where the two houses of parliament decide whether to accept each other's amendments or not. Instead, the bill went into 'wash up', which meant that the House of Commons nodded it through without a vote, accepting all of the Lords' amendments.

The Equality Bill became the Equality Act and was one of the last laws to be passed before parliament was dissolved for the general election. The act is important for people with HIV because it strengthens anti-discrimination laws, especially in the context of employment.

As Eleanor Briggs from NAT explains on page 4, one very important change is that employers will no longer be able to ask job applicants to complete detailed health questionnaires before they even attend an interview. From October on, questionnaires should only be completed once a provisional job offer has been made.

Another change is that if the partners, friends or family members of people with HIV are discriminated against because of their closeness to a person with HIV, they will be protected under the law too. And if someone suffers discrimination because they are wrongly assumed to have HIV, they will also be covered.

The Equality Act brings together nine previous laws covering discrimination on the grounds of race, sex, sexual orientation, disability and so on. The new law recognises that people can be discriminated against because of a combination of factors - for example, as a black person with HIV.

And the new law closes some legal loopholes that have been allowing discriminatory employers to wriggle out of their responsibilities.

Elsewhere in this issue, Derek Thaczuk examines one of the health issues that is emerging as a problem as people with HIV live longer and get older. The thinning and weakening of the bones is not the concern exclusively of older women, but can affect HIV-positive men and women of all ages.

Researchers still lack clarity on whether this is an effect of HIV infection itself, or of the antiretroviral drugs used to treat it. What's more, if the drugs are contributing to the problem, there's no certainty about which drugs are the culprits.

So what can you do? As ever, a healthy lifestyle makes a difference and Derek outlines the specific recommendations in his article.

On the subject of things you can do for yourself, on page 14 we explore self-insemination. For couples where the female partner has HIV and the male partner does not, it's a low-tech way to get the sperm from the man to his partner without him risking HIV infection.

HTU's editor, Gus Cairns, will be back next month.

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In for the long haul

With modern treatment, people with HIV can expect to live for decades and decades. But is this sustainable? How realistic is it to expect the drugs to work over a lifetime and for people to continue to adhere to their treatment regimen throughout? What are the risks of drug resistance and treatment failure occurring during long-term treatment?

Combination therapy has been in use for not even 15 years, so any answers can only be preliminary. But two large British studies, just published, have shed some light on these important questions.

The first gives us a reason to be optimistic. It comes from a single hospital in London (the Royal Free) and tracked adherence in its patients over several years.¹

It's often thought that treatment adherence (in other words, not missing doses nor taking them late) is likely to deteriorate when people take treatment for a number of years. It may be hard to maintain motivation over a long period. What's more, doctors for a wide range of medical conditions have observed that people tend to be less adherent when they don't feel unwell (it may not be so obvious why the drugs are needed).

The researchers collected information on just over 2000 patients for an average of four and a half years. Some patients' adherence was monitored for as long as nine years. Adherence was monitored in six-monthly periods, and calculated as the proportion of days covered by a dispensed prescription for at least three drugs (as correctly taking doses of all drugs in a combination is important).

It's often said that a minimum of 95% adherence is needed for treatment to

be effective. Here, overall, 92% of doses were taken.

Adherence in the group has been better since 2005 than it was in previous years. Compared to gay men, adherence tended to be better in black women and poorer in black heterosexual men.

However, the headline finding was that adherence didn't drop the longer someone was on treatment. In fact, the reverse: the chances of a patient remaining adherent increased by about 2% each year.

What's more, the older someone was, the more likely they were to stick to their treatment. Other studies have found that older people are more likely to attend their appointments and to recognise the medical consequences of poor adherence.

But while overall adherence was good, one concern is that half the Royal Free patients experienced at least one period of poor adherence. This was often a one-off event, a few weeks or months when adherence was not as consistent as at other times.

The researchers advocate close monitoring of people's adherence. The concern is that even a single, relatively short period of poor adherence can, in some cases, give rise to the development of drug resistance.

That finding may help us interpret the results of the second study, which are somewhat less optimistic. The researchers collected data on treatment failure and drug resistance in almost 8000 patients at eleven large HIV clinics in England and Scotland. Data were collected on individuals for up to eight years.²

The researchers defined virological failure as having two consecutive viral load results

above 400 copies/ml (but not within the first six months of taking treatment). After eight years, over a quarter (28%) of people had experienced virological failure at least once, and would have needed to change treatment.

The researchers also found that 17% of people had some drug-resistant virus. People who had taken non-nucleoside reverse transcriptase inhibitors (NNRTIs, such as efavirenz) were more likely to have resistance than those taking protease inhibitors.

However, as in the previous study, the older someone was, the less likely they were to have drug-resistant virus. Again, women had better results than men.

People who had low CD4 counts and high viral loads when they started treatment (i.e. people who started treatment relatively late) had a much greater risk of having drug-resistant virus than other people.

The researchers express concern that an appreciable number of people have these problems with the drugs that are routinely recommended for people starting treatment. Resistance which emerges today will limit the range of drugs that will be effective in the future.

But is the glass half-full or half-empty? If three out of ten people have treatment failure, that means that seven out of ten don't. What's more, in this country, alternative treatment regimens are almost always available. Doctors are right not to be complacent, but these two studies do tell us that a significant number of UK patients are able, over a period of almost a decade, to adhere to their treatment and keep their viral load suppressed.

equal billing

Eleanor Briggs of NAT explains how the Equality Act will improve legal protection for people with HIV in the workplace.

Since 2005, people living with HIV have had legal protection from discrimination at work. But research published last year by NAT (National AIDS Trust) and City University found that a third of people living with HIV in work were unaware of the protection available to them. With the Equality Act set to increase such protection, it is more important than ever that people are aware of and can exercise their rights.

A new legal landscape

The Equality Act was passed by parliament in April and most of its provisions are due to come into force from this October. It would be impossible to describe here the whole Act and accompanying Codes of Practice – that together cover more than 1000 pages. Instead, this article looks at the changes that will have most impact on people living with HIV from an employment perspective.

Legal protection from discrimination is not new for people living with HIV. The first Disability Discrimination Act came about in 1995. Doubts about whether all people living with HIV were covered by this Act came to an end when the Disability Discrimination Act 2005 (DDA 2005) explicitly stated that anyone living with HIV is automatically treated as disabled under the Act.

In a further step forward, the new Equality Act will bring together and strengthen all discrimination law introduced over the last four decades, making it simpler for employers and employees to understand their responsibilities and rights. Legislation covering age, disability, race, sex, sexual orientation, gender reassignment, marriage, civil partnership, pregnancy, maternity, religion and belief has been brought together into one streamlined Act.

The DDA 2005 protects people from discrimination in employment (and will continue to do so until the new Equality Act comes into force). This includes direct discrimination, failure to make reasonable adjustments, treating disabled people less favourably and subjecting disabled people to harassment or victimisation. But what does this mean for someone living with HIV at work and how will the new Equality Act extend these rights?

Direct discrimination

An employer does not put forward an HIV-positive person for a promotion because they wrongly assume that person would not be able to meet the demands of the role because they have HIV.

This is an example of direct discrimination – when someone is treated less favourably **because of** their disability. The Equality Act will continue to prohibit direct discrimination.

Indirect discrimination

An employer organises a team-building and training event in a country where there are entry restrictions for people living with HIV, putting people living with HIV at a particular disadvantage because they may not be able to attend.

This is an example of indirect discrimination – discrimination that occurs when a disabled person is disadvantaged by a **decision which is applied to everyone but that puts disabled people at a disadvantage** when compared to non-disabled people. For the first time, the Equality Act prohibits indirect discrimination in relation to disability.

Discrimination arising from a disability

Someone living with HIV is asked by their employer to move to a floor where there are no toilets, causing them problems as the side-effects of their treatment mean they need immediate access to a toilet.

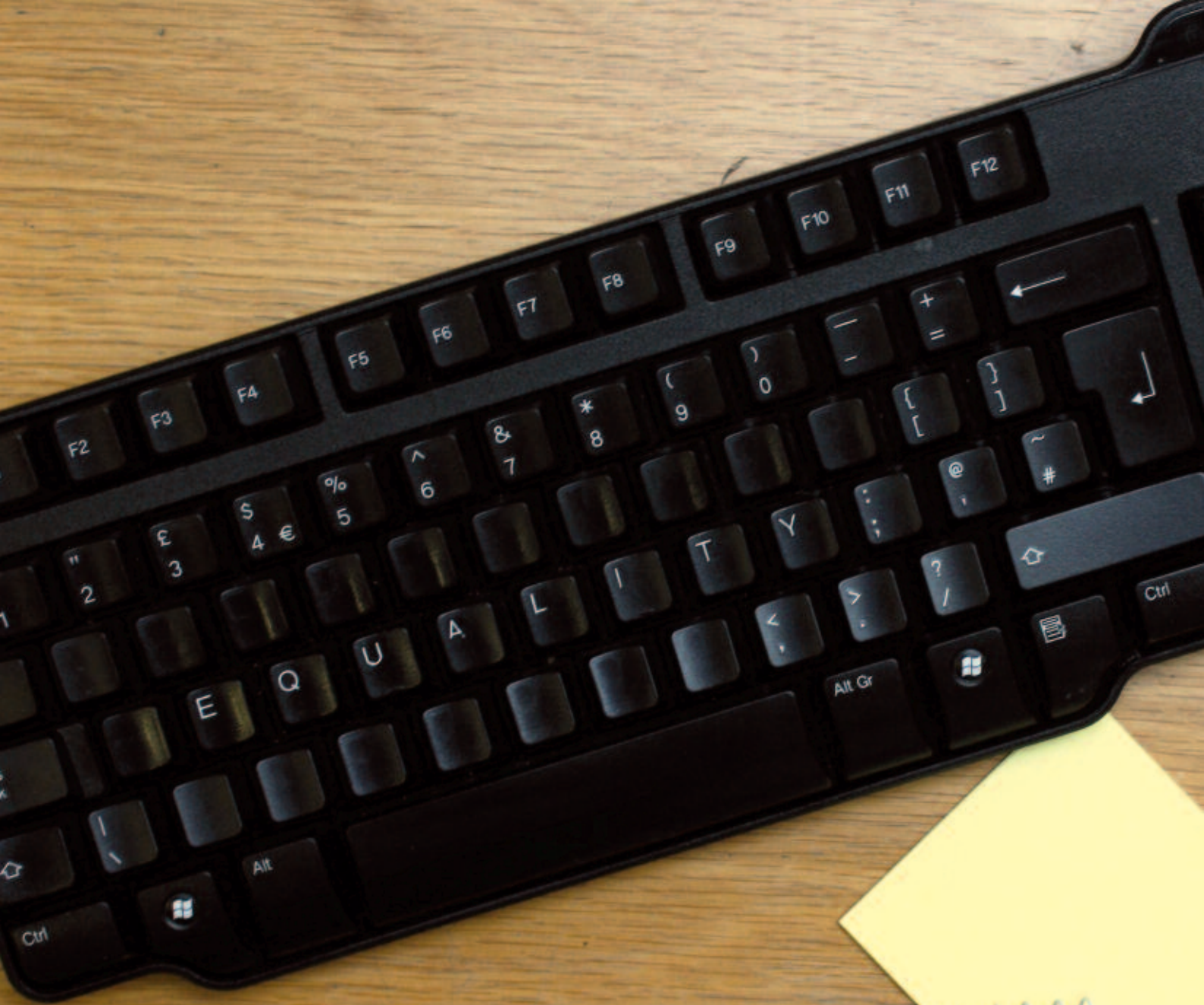
This is an example of discrimination arising from a disability (which replaces disability-related discrimination in the DDA 2005). This occurs when an employer treats a disabled person unfavourably because of **something arising in consequence of** the disabled person's disability. This differs from indirect discrimination, as unlike indirect discrimination, there is no need to show that the practice has been applied to other people.

Reasonable adjustments

An employee tells their manager that they have recently changed HIV medication and have had some difficulties with fatigue and other treatment side-effects. The manager is sympathetic and allows the employee to start work later, making it easier for them to continue to work whilst adjusting to their treatment.

Whilst some aspects of employment law will change when the Equality Act comes into force, others remain largely the same. Since 2005 employers have had a duty to make 'reasonable adjustments' to alter features of the workplace that put people living with HIV at a substantial disadvantage. These can include changes to the physical workplace or working practices. As the example above shows, such changes can make a real difference to people living with HIV and make the difference between struggling to manage and working in a comfortable and accommodating environment.

NAT's employment research discovered that a third of survey respondents were not aware of their rights at work. And even of respondents who were aware of the DDA 2005, almost a third did not know that if they had disclosed their status at work they were entitled to ask for reasonable adjustments. Without reasonable adjustments, some faced difficulties managing their condition at work, as this person explained:



"It was very, very difficult to get time off. I ended up having to ask my work colleagues, to say, look I'm unable to come in on this day, could we swap so that I'll cover you if you'll cover me, that kind of thing."

Of those aware of their rights to ask for reasonable adjustments, nearly a third had asked for some kind of change to their working life. The type of adjustments requested were straightforward, usually involving flexibility around working hours – 67% of people requested time off to attend clinic appointments, 52% asked for changes in hours and 50% asked for a change in start and/or finish times.

These types of adjustments are relatively easily accommodated by most employers, illustrated by the fact that nearly 90% of those that had requested reasonable adjustments at work had had these fully or partially granted. This is encouraging, meaning that for the vast majority of employers it is possible to accommodate someone living with HIV in their workforce without huge expense or difficulty.

Harassment

"My confidentiality about my HIV status was breached at work, and colleagues began to treat me differently. I began to feel excluded and uncomfortable in the office and then one day found HIV-related graffiti on my in-tray."

This case study from our employment research is an example of HIV-related harassment. Harassment is unwanted conduct that has the effect of violating a person's dignity or creating an intimidating, hostile or degrading environment.

It is important to remember that an employer is liable for acts of discrimination, harassment or victimisation committed by their employees. In the case study above, unless the employer could have shown that they had taken 'all reasonable steps' to prevent this type of harassment, they would be liable. This can even extend to work-related social functions outside working hours and

My confidentiality about my HIV status was breached at work, and colleagues began to treat me differently. I began to feel excluded and uncomfortable in the office and then one day found HIV-related graffiti on my in-tray. Case study, NAT

premises – so an employer could be liable for the harassment of an HIV-positive member of staff which took place at work drinks in a local pub.

The Equality Act also extends protection for people living with HIV outside the workplace. For the first time, disabled people will be protected from harassment when accessing goods and services.

Recruitment – an important new protection

The Equality Act will bring in changes not only for those in work, but for those looking to go back to work. For the first time, and after extensive campaigning, the Act will prohibit the use of pre-employment health questionnaires. Until now, employers have been able to ask job applicants whether they have a disability, are taking medication or have a medical condition even if it had no relevance to the job

they were applying for. Even though discrimination in recruitment was prohibited under the DDA 2005, unscrupulous employers could use responses to filter out applicants with a disability such as HIV and it would be very hard for the disabled person to prove that this is why they were unsuccessful in their application.

The Bill did not originally contain this new prohibition and NAT worked hard, in partnership with other disability organisations, to ensure this made it into the final Act. Why was this necessary? Our employment research revealed that nearly a fifth of HIV-positive respondents were specifically asked about their HIV status on a pre-employment health questionnaire and almost three-quarters reported that this made them feel uncomfortable. These questionnaires had the negative effect of putting people off applying for new positions:

"I was going to apply for a different department and saw the form and thought sod that, I'm not, because I think it specifically asked about HIV and I thought no I'm not."

So from October 2010 when the Equality Act will come into force, employers will no longer be able to ask these questions at this stage in the recruitment process.

New types of protection

"Being from an ethnic background, being black, is one thing...being from an ethnic minority and being black and having HIV, that's another problem."

The Equality Act will introduce the concept of 'combined discrimination'. This is when a person is treated less favourably than others because of a combination of two characteristics. This new aspect of the Act may assist people living with HIV who often face discrimination because of their ethnicity and/or sexual orientation as well as their HIV status, as the quote from our research highlights.

In another step forward, the Act will introduce protection from

The Equality Act should be enthusiastically welcomed. Legal protections against discrimination at work are vital, not least because they can prevent employers from discriminating in the first place.

discrimination based on 'association or perception'. The stigmatised nature of HIV means that many people who live with or care for people living with HIV face discrimination. In addition, groups particularly affected by the virus, such as gay and bisexual men, can experience discrimination because they are wrongly assumed to be HIV-positive. What will the new protection mean in practice?

An employee whose partner is living with HIV is not invited to staff parties because of her partner's status – under the new Act she could take a case of discrimination because of association.

A gay man is not promoted by his employer because the employer wrongly assumes he is HIV-positive – under the new Act this would be discrimination based on perception.

NAT originally called for this to be included within the DDA 2005, so we were particularly pleased when the Equality Act extended discrimination law in this way.

The Equality Act will also make some improvements to the tribunal process. The Act extends the power of employment tribunals to make recommendations that employers take specific steps to change their employment practices even where they do not affect the disabled claimant. This is a significant improvement, as under previous legislation a tribunal could only do this if the disabled claimant would benefit. In many cases, the claimant was no longer employed by the employer, meaning that such recommendations were rarely made and discriminatory practices continued until they were challenged again.

Under the new Act tribunals will be able to recommend that an employer takes steps such as implementing a harassment policy, providing equality and diversity training or introducing more transparent recruitment and promotion processes. If the employer then fails to comply with these recommendations, they can be ordered to pay compensation and it can be taken as evidence in any later cases against the same organisation.

How important is protection from discrimination?

Last summer NAT published the findings of its research looking into the experiences of people living with HIV at work. This study, carried out in partnership with City University, involved focus groups with heterosexual black Africans and gay and bisexual men as well as an online survey of 1830 HIV-positive gay and bisexual men. The picture from the research was encouraging, with over half of survey respondents saying HIV had no impact on their working lives:

"I just don't feel it's relevant to my work. My line manager knows, she knows when I'm not there where I'll be and that I do the job to the best of my ability and it doesn't affect my work at all."

However, of those who had disclosed their HIV status to someone at work, a fifth had experienced HIV discrimination. More than a third of respondents who had disclosed their HIV status and experienced discrimination believed they had lost a job as a result. In other words, discrimination is still an issue in the workplace making these legal protections immensely important.

We also asked whether people who had experienced discrimination had sought redress or used their rights under the DDA 2005. We found that a third of HIV-positive respondents made a complaint when they experienced discrimination. Of these complaints, 57% were only partially resolved or not resolved to the satisfaction of the respondent (21% were still ongoing at the time of the research and 22% were resolved). The fact that only a third of employees who had experienced discrimination had gone on to pursue a grievance claim is in itself evidence of the need to support more people living with HIV through the complaints and tribunal processes.

The Equality Act should be enthusiastically welcomed. Legal protections against discrimination at work are vital, not least because they can prevent employers from discriminating in the first place. But legislation alone will not end HIV-related discrimination at work and in recruitment. That is why NAT is taking steps to ensure that more accurate information about HIV at work is available for employers, alongside better support to help people living with HIV understand and access their rights. We need to break down the remaining barriers that stop some people living with HIV making a valuable contribution to the workforce.

NAT will be updating its employment resources before the Equality Act comes into force in October 2010. To read NAT's employment research in full or find out more about the Act go to www.nat.org.uk. ■

skeleton key: a guide to hiv-related bone loss

Many people with HIV are at risk of osteoporosis – a progressive thinning of the bones that can lead to breakage. *Derek Thaczuk* looks at who is at risk and what preventive steps can be taken.



Several years ago, people with HIV and their doctors began to notice that bones were breaking suspiciously often. Studies soon confirmed that osteoporosis – the thinning, brittle bones traditionally associated with women past the age of menopause – was in fact common among those living with the virus.

We are continuing to gather insights into who is most at risk. More importantly, these insights suggest steps HIV-positive people may be able to take to protect their bones.

Bones are basically the body's scaffolding, a rigid support system that houses and protects more delicate organs and tissues. Although bones are largely made of calcium and other minerals, they are living organs nonetheless. Like most bodily organs, they are in a constant state of replacement – simultaneously being built up from, and eroding back into, the components from which they are made.

In healthy adults, breakdown and build-up are roughly balanced. Overall bone mass reduces slowly as we age, but sometimes, however, the rate of breakdown greatly outpaces replacement, so that bone minerals erode away much more quickly over time. A significant amount of **bone mineral density** (BMD) can be lost without posing a significant risk of bone breakage: this moderate amount of BMD loss is called **osteopenia**. If the loss continues, bones become porous, spongy, fragile and easily broken – a more serious condition known as **osteoporosis**. Loss of bone density often produces no noticeable symptoms, at least in the early stages, and can easily go undetected until a bone breaks.

In the population at large, osteoporosis occurs most frequently in women past the age of menopause. It is less common in men because men have larger skeletons, their bone loss starts later and progresses more slowly, and they have no period of rapid hormonal change and bone loss. However, by 65 or 70, men and women are losing bone mass at the same rate, as well as having a decreased ability to absorb calcium.¹

Studies have also found osteoporosis to be common amongst HIV-positive men of all ages, as well as in some younger HIV-positive women. In 2006, Todd Brown and colleagues at Johns Hopkins combined data from eleven smaller studies in the United States. This large analysis found osteoporosis in 15% of the HIV-positive participants overall – three and a half times the rate in similar HIV-negative people.² Researchers have noted that the rates of bone loss seen in HIV-positive men in their mid-40s are substantial, similar to the significant rates of loss in women aged 55 to 75 years.³ Other studies have produced both higher and lower estimates of osteoporosis rates, owing maybe to variations between study groups, such as how long people had been HIV-positive or on therapy. Yet one thing is consistent: osteopenia, at least, is extremely common in people with HIV, being seen in up to half of study participants.^{4,5,6}

Sticks and stones

Given how common bone loss is amongst people with HIV, how often does it actually lead to breakage? In answering this question, investigators need to be clear about what they are looking for, since many fractures are unrelated to osteoporosis. Some studies have looked at all fractures, regardless of cause or type, but many researchers choose to disregard so-called **traumatic** fractures – those caused by high-force impacts, such as breaking an arm in a fall downstairs. The risk of traumatic fractures should be largely unaffected by bone density: if you fall hard enough, even a perfectly healthy bone is going to break.

Therefore, many studies look only at **fragility fractures**, the type most associated with osteoporosis. Typically seen at the wrist, spine or hip, fragility fractures can result from very light impacts – such as a fall to the floor from a standing position – and generally do not occur in healthy bones.

Studies are finding that HIV-positive individuals are generally more prone to fragility fractures than their HIV-negative counterparts. However, they do not all agree on exactly who is most at

risk, or to what extent. In the HIV Outpatient Study (a large and largely male US cohort), fragility fractures were nearly two and a half times more likely than estimated rates in the general US population.⁷

Who is most at risk?

Many factors have long been known to heighten the risk of osteoporosis in older women, and many of these are proving true for people with HIV as well. Studies have consistently found that 'traditional' risk factors including smoking, heavy alcohol intake, low body weight, and low testosterone levels all increase the risk of bone loss in people with HIV, and that risk increases with age.

At one point, this led some experts to suggest that HIV itself did not play a direct role in bone loss – rather, that the loss was purely due to factors commonly associated with HIV, such as low body weight.⁸

But at least one recent study, after carefully accounting for the effects of body mass and other factors, found that simply being HIV-positive does make bone fractures about 40% more likely – at least in men.⁹ In women, HIV seems to be an additional risk factor for bone loss after the age of menopause.¹⁰ Below that age, HIV does *not* appear to make broken bones any more likely¹¹ except in women with other risk factors such as low body weight and low testosterone.¹²

Antiretrovirals: bad for bones?

Does antiretroviral treatment (ART) affect the risk of osteoporosis and bone fracture? Not everyone agrees: at least one sizeable study, of both men and women, found that being on or off ART made no difference to bone mineral loss.¹³ Most investigations, however, have found that bone damage is indeed more likely in people on ART, and that the risk increases the longer one is on treatment.^{14,15} Most experts now believe that HIV infection and antiretroviral treatment each play some role in bone loss.

setting the scales

Bone mineral density (BMD) is expressed as a 'T-score', which compares an individual's bone density values to the average for the overall population. A T-score of zero would mean that the person's BMD is exactly equal to the population average; negative T-scores indicate lower-than-average BMD.

Osteoporosis is defined as a T-score of -2.5 or lower, corresponding to a BMD in the bottom 0.62% of the population. Osteopenia is defined as a T-score in the range from -1 to -2.5, which includes one-sixth of the population as a whole.

Some experts have argued that these definitions, especially that of osteopenia, are arbitrary and more statistical than medical. In fact, a recent African study of pre-exposure prophylaxis (PrEP) in healthy, HIV-negative men and women found that almost half had osteopenia by the standard, US-based definition,²¹ leading the researchers to question whether these 'normal' values apply to everyone. Our notions of risk levels may require some questioning as we continue to investigate BMD in HIV-positive populations.

Ritonavir-boosted protease inhibitors (PIs) and the nucleotide reverse transcriptase inhibitor (NRTI) tenofovir (*Viread*) have often been cited as the drugs most likely to lead to bone loss, but not all evidence from clinical studies agrees. For instance, one recent comparison of efavirenz (*Sustiva*, also in the combination pill *Atripla*) to boosted lopinavir (*Kaletra*) found that people on either drug (with a standard two-nucleoside combination) lost nearly equal amounts of BMD after two years.¹⁶ However, a similar study from France found almost twice the degree of bone loss in people taking boosted PIs than in those on non-nucleoside reverse transcriptase inhibitors (NNRTIs).¹⁷ Differences between individual PIs are also unclear: most studies so far have not been large enough to separate out the different drugs, but have looked at the class of PIs as a whole. Similarly, many but not all studies have found tenofovir to be linked to bone loss. Test-tube studies have shown that tenofovir can affect bone metabolism, and one large study found twice as much spinal bone mineral loss with tenofovir than with d4T (stavudine, *Zerit*) over three years, in combination with efavirenz and 3TC (lamivudine, *Epivir*).¹⁸

Why does bone loss occur?

Although the exact causes of HIV-related bone loss are still poorly understood, several clues are emerging. Some experts believe that the growing list of metabolic problems common in people with HIV – from bone loss to cardiovascular risk to kidney failure – are part of an overall pattern of 'accelerated ageing'. The ongoing immune activation (inflammation) caused by chronic HIV infection is often seen as driving this process, so that younger HIV-positive people experience problems normally seen in older adults.

A wave of recent studies has also found that vitamin D – a vitamin crucial for bone formation – is very widely deficient among people with HIV,¹⁹ as it is in the general population. But it is unlikely that vitamin D deficiency alone is enough to explain the degree of bone loss being seen, as osteoporosis and fragility fractures have been observed in people

(with or without HIV) who have a normal vitamin D level.

There may be a link between antiretroviral treatment and vitamin D deficiency. Several bodily hormones, including one known as parathyroid hormone (PTH), control how much calcium is released from bones. If more calcium is needed elsewhere in the body (for instance by the nervous system, where it regulates nerve signals), PTH levels go up, which stimulates more calcium to be released from the bones into the bloodstream. Once enough calcium is released, the hormone levels usually drop, signalling 'enough' and causing the bones to retain calcium again.

However, several other factors may drive up PTH levels in people with HIV. One is the low vitamin D levels now known to be common. Secondly, tenofovir may also increase PTH, creating a 'false signal' that causes calcium to be continually leached from the bones.²⁰ While this is still a preliminary theory, it may pave the way for a more extensive understanding of how HIV drives bone loss – and how to correct it.

Beating the breaks

One of the first steps in prevention is adequate screening. Bone mineral density can be measured painlessly with a diagnostic scan known as DEXA (for dual energy X-ray absorptiometry). DEXA scans usually assess bone density at the hip joint and a representative segment of the spine. Forthcoming BHIVA (British HIV Association) guidelines will make recommendations on when DEXA scans should be used in people with HIV.

What can I do?

Currently, recommendations for treating or avoiding bone mineral density loss are based on many years of experience treating osteoporosis in older women. The approach is basically threefold: diet and supplements, exercise, and addressing 'secondary factors'.

As calcium and vitamin D are essential to bone formation, people at risk of bone loss should make sure to get plenty

of both. Many dietary foods are rich in calcium, including milk and other dairy products, leafy green vegetables such as kale and broccoli, beans such as soy and baked beans, nuts, sesame seeds, and many types of fish like salmon and sardines. Vitamin D is found in oily fish and eggs, as well as in foods that are specially fortified, such as breakfast cereals. However, to guarantee adequate amounts you may want to consider taking supplement tablets, particularly if your diet does not include many of these foods.

How much supplementation is appropriate is still a bit of an open question. Recommendations generally run in the range of 1000 to 1200mg calcium and 10 to 30µg (micrograms - 0.01mg) or 400 to 1200 IU vitamin D (see below). These are largely based on experience with osteoporosis in HIV-negative older women, so there is no guarantee that they are appropriate for people with HIV – for instance, we do not yet know for sure whether supplements at this level can correct HIV-related vitamin D deficiency. However, given what we do know, supplementation seems a wise step for anyone at risk. Taking too much of a supplement can be harmful, so it is a good idea to talk to someone at your HIV clinic, or your GP, before you start. You could also ask to talk to a dietician, to find out if you can adapt your diet to increase the calcium and vitamin D it provides.

The body produces its own vitamin D when the skin is exposed to ultraviolet-containing sunlight. People with brown or black skin may have lower levels of vitamin D than people with fairer skin, and the British climate can also lead to levels being low, especially during the winter. When sun is scarce and much of life happens indoors, getting extra vitamin D is all the more essential.

Another reason to quit

Many factors besides HIV contribute to risk of bone loss, and while some of these cannot be changed, others can. Smoking and heavy alcohol consumption are well-known risks, not only for bone loss, but for a host of other health

As calcium and vitamin D are essential to bone formation, people at risk of bone loss should make sure to get plenty of both.

problems including lung and other cancers, heart attack and stroke. Although it may be difficult, quitting smoking is probably one of the best things an HIV-positive person can do to better their all-round health prospects.

In the 'healthy lifestyle' discussion, exercise usually follows hot on the heels of the 'quit smoking/watch your drinking' advice, and this is no exception. Specifically, **weight-bearing exercise** is recommended for those at risk of or diagnosed with osteoporosis. This means any type of exercise in which your muscles are forced to work against gravity. If that definition seems rather abstract: swimming and cycling don't count; weight-lifting, running and walking, stair climbing and aerobics do. While non-weight-bearing exercise like swimming is certainly good for your health in other ways – nobody says you

shouldn't do it! – only weight-bearing exercise actually stimulates the growth of new bone. (People who are actually at risk of bone fracture due to low bone mineral density should clearly use caution and seek expert advice before attempting any possibly risky exercise.)

Finally, several of the other risk factors discussed above may also be addressable. Low testosterone – in men and women – is detectable, treatable, and may address a number of other problems: regular screening is useful for people with HIV and, if no-one in your healthcare team suggests it, you may want to raise it as a possibility. People with low body mass (i.e. possibly underweight) may require concerted effort on the right kinds of diet and exercise, and some people with HIV find it very challenging to gain weight in the form of muscle mass rather than unwanted fat. However, each pound gained – up to a point – is a pound of protection against osteoporosis and other problems.

Finally, there are drug treatments available. A once-weekly dose of alendronate (*Fosamax*) has been shown to help HIV-positive people gain bone mineral density more effectively than calcium and vitamin D supplements alone, without significant side-effects.²² Other drugs in the same class as alendronate (called bisphosphonates) are also available and have been used to treat post-menopausal osteoporosis; some of these are being studied for people with HIV-related bone loss and may also prove to be safe and effective. ■

International Unit (IU)

When describing how drugs or other active substances like vitamins or vaccines work, the international unit is sometimes used as an alternative measurement for an amount. It is not directly equivalent to how much something weighs; for example, one IU of vitamin D is not the same amount in milligrams as one IU of vitamin B. The idea is to measure the effect, or activity, of the substance.

news in brief



Mother-to-child transmission

Need to start treatment earlier

A British study suggests that pregnant women with HIV need to start treatment earlier, especially if their viral load is relatively high.¹

According to current guidelines, pregnant women who aren't already taking HIV treatment should start to treatment between the 20th and 28th week of the pregnancy, in order to prevent mother-to-child transmission. Many women would prefer to have a vaginal delivery, and if viral load is undetectable by the time of delivery, this may be possible (otherwise, a caesarean section would be recommended).

The researchers wanted to see whether women beginning treatment during pregnancy were able to get an undetectable viral load by the time of delivery. They found that this was less likely to be the case if viral load was above 10,000 copies/ml when treatment was started. Women who started treatment later in the pregnancy were also less likely to achieve an undetectable viral load.

The researchers say that women who want to be able to have a vaginal delivery will need to start treatment earlier. If viral load is above 100,000 copies/ml it should be started without delay. If viral load is above 10,000 copies/ml, treatment needs to begin by week 20.

Meanwhile, a separate study confirmed that transmission from mother to child is an extremely rare event in European countries. Danish researchers tracked just over 200 pregnancies in HIV-positive women since the year 2000.²

In only one case was HIV passed on to a child, and in this case the mother was

not diagnosed before delivery and did not receive antiretroviral therapy. When Danish guidelines on prevention of mother-to-child transmission were followed, no women passed on HIV to their babies.

Sexual transmission

Early treatment for gay men?

Swiss researchers have suggested that sexually active gay men with HIV should have early and continuous antiretroviral therapy, in order to reduce their risk of passing on HIV.

They came to this conclusion after finding that a large number of new infections could be traced back to sexual partners who had chronic HIV infection, rather than recent infection. 'Chronic' infection means that it is long-term and well-established. While a number of other studies have found that people passing on HIV are very often those recently infected (and often undiagnosed), this doesn't seem to have been the case among Swiss gay men.

The researchers examined the viral strains of people with recent infection, and compared these to the virus of other people with HIV in Switzerland. Using a technique called phylogenetic analysis, they tried to establish who was most likely to have been the source of infection.

Looking at the viral strains of 28 gay men, where the researchers think they can establish a link between one person and another, only two infections originated in a man with recent infection. All the other men transmitting HIV had chronic infection.

One unusual feature of this study population was that many of the men with chronic infection had been diagnosed during recent infection and

had taken antiretroviral treatment, which they then discontinued. HIV transmission took place when men with chronic infection were off treatment.

The researchers say that early, uninterrupted HIV treatment for sexually active gay men with HIV would have a "profound" impact on the spread of HIV. But recommending treatment to a person who doesn't actually need it for his own health would be controversial.

Drug resistance

Resistance tests useful for people with low viral loads

Genotypic resistance tests are able to detect drug resistance even in patients with a low viral load, UK researchers have reported. Their findings suggest that resistance tests for people with low viral loads could become a routine part of HIV care.¹

The goal of HIV treatment is a viral load below 50 copies/ml. Viral loads a little higher than this, in the hundreds, can sometimes be an early sign that treatment is failing. While resistance tests can help clarify what is going wrong, they are usually thought to be most accurate when viral load is above 1000 copies/ml.

However the new study analysed the results of almost 8000 resistance tests. They found that tests carried out for patients who had low viral loads identified almost as many resistance mutations as tests for people with higher viral loads.

People with a viral load below 300 copies/ml had an average of three mutations, while people with a viral load between 300 and 10,000 copies/ml had four mutations.

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Identifying resistance mutations can help doctors choose an alternative treatment regimen, made up of drugs which a person's virus is not already resistant to.

Tuberculosis

Not enough research

Better research on the treatment of TB (tuberculosis) in people with HIV is urgently needed, researchers from a recent study have concluded. A group of experts conducted a systematic review and meta-analysis of all the existing studies on this topic, and could only find a handful of high-quality studies.¹

The researchers identified six randomised controlled trials (the most reliable form of research), as well as 21 observational cohort studies. The latter is generally a less reliable research method, but these 21 studies were nonetheless considered to be sufficiently well-conducted to be included.

The authors were shocked by the paucity of information available, and say that a number of basic treatment questions remain unanswered. These include the optimal dosing schedule and duration of antibiotics from the rifamycin drug class.

Latest figures suggest that, worldwide, 15% of people with TB also have HIV and that half a million people die of HIV-associated TB each year. In the UK, TB is a disease that often affects people with undiagnosed HIV or people who have only had their HIV diagnosed several years after infection.

The World Health Organization has just released new guidelines on the treatment of TB, recommending that all HIV-positive people with active TB should start HIV treatment immediately, regardless of their CD4 count.²

Children

HIV subtype affects educational development

In children with HIV, having subtype A is associated with poorer cognitive and educational development than subtype D.¹

That's the key finding of a study of 54 Ugandan children with HIV. The children were given tests of memory, problem solving, learning, planning and attention.

Some children with HIV have difficulties with learning and educational development. However, this is the first

study to examine whether cognitive performance varies according to subtype.

There are a number of different subtypes (or variants) of HIV-1. For example, subtypes B and C are those most commonly found in the UK and southern Africa respectively. On the other hand, subtypes A and D are frequent in Uganda, as well as among Ugandans living in the UK.

None of the children studied in Uganda were taking antiretroviral therapy, and as a result impairment in mental functioning was much more common than in the UK. But even after controlling for viral load, children with subtype A had poorer memory and visual-spatial analysis than those with subtype D.

The researchers say that subtype A may have a more direct effect on brain functioning than subtype D. They say that if their findings are confirmed by other studies, children with subtype A may need to be offered those antiretroviral drugs which are best at getting into the brain.

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try this at home

For couples where the woman has HIV and the man does not, self-insemination is a safe way to get pregnant. *Selina Corkery* and *Roger Pebody* explain.

For many women with HIV in the UK, effective treatment means that the desire to have a child without passing on HIV can become a reality. For women on combination therapy and with a viral load of less than 50 copies/ml the rate of transmission from mother to baby is one in 1000.¹

Of course, how to get pregnant is an issue. For HIV-positive women, unprotected sex is not always the best way. As for any other woman, a sexually transmitted infection (STI) could be passed on, which might pose a risk for your own health and, if left untreated, could have serious consequences for your baby. If both you and your partner have HIV, there may be a risk of superinfection.

If your partner is HIV-negative, you might pass HIV on to him. For couples where the woman is positive and the man negative, a good option is self-insemination.

“Lots of people don’t realise what a simple option this is,” says Julie Fowler, clinical nurse specialist at Jefferiss Wing, Imperial College Healthcare NHS Trust (St Mary’s Hospital). “There’s no reason why it should be any less successful than the standard way of conceiving. The worst thing people report is a bit of awkwardness – it’s best approached with a sense of humour.”

Julie emphasises the benefits of talking to staff at your HIV clinic if you’re thinking of trying to become pregnant. There’s some useful preparation women can do before conceiving, such as taking folic acid, a vitamin needed to make new cells in the body. You should check that any anti-HIV drugs you are taking are safe in pregnancy. It’s also

recommended that both partners have a sexual health check in case of STIs.

Staff can also provide advice about insemination and the equipment you need (see the step-by-step guide on this page), including determining your fertile period – an important part of maximising your chances of conceiving.

Self-insemination works best in younger women – those in their 20s and 30s. That’s because fertility declines with age in all women. And HIV-positive women may have more difficulty conceiving than their HIV-negative peers. According to Julie, “It can take a while for any woman to become pregnant. But we might start investigating a bit sooner if someone hasn’t conceived, say, in six months. And perhaps a bit earlier with older women.”

Self-insemination might not be the best option for couples where both are HIV-positive. It’s definitely not suitable when the man is HIV-positive and the woman not. But there are other options such as sperm-washing. Julie encourages anyone thinking about starting a family to talk to their clinic staff. “There are still things you can do,” she says. “The important thing is to talk to your doctor.”

A step-by-step guide to self-insemination

This technique is suitable if you are a woman with HIV, and your male partner is HIV-negative. You need to make sure that neither you nor your partner has any sexually transmitted infections before using it.

1. Make sure this is one of your fertile days (see opposite). It’s best to try the technique several times during your fertile period.

2. Ask your partner to masturbate and ejaculate into a container. The container doesn’t need to be sterile, but it should be clean and dry.
3. Next you’ll need a plastic syringe. Your HIV clinic can provide them, or you can buy the kind used to give medicine to babies at a chemist.
4. Wait up to 30 minutes for the semen to become more liquid.
5. Draw back on the syringe once with nothing but air, then push the air out again. Now point the syringe into the liquid and slowly draw it back to suck in the semen.
6. Get into a comfortable position lying on the bed with your bottom raised on a cushion.
7. Either you or your partner can now slowly insert the syringe as far into the vagina as possible.
8. The area to aim for is high up in the vagina, towards the cervix.
9. Slowly squirt out the contents of the syringe. Gently remove the syringe.
10. Try to remain lying down for the next 30 minutes while the sperm makes its way through the cervix. Some semen may leak out but this is normal, and doesn’t mean it won’t have worked.

An alternative method is for you and your partner to have sex together, using a male condom. After sex, your partner should take his penis out of your vagina with the condom still on and then take it off. Using a syringe, transfer the semen to your vagina. If you use this technique, make sure that the condom doesn’t contain a spermicide.

Knowing when you are fertile

If you're going to use self-insemination techniques, you'll want to try them on the days when you have the best chances of success. Pregnancy can only occur during a few days each month, and is most likely to happen at the time of ovulation (when an egg is released from one of the ovaries).

"There's a range of ways of telling when you're ovulating," Julie Fowler explains. "Counting the days [see the method explained opposite], cervical secretions, ovulation pain or body temperature can all be signs. But not all women will have a physical sign. Ovulation kits are available from chemists and are a reliable way of knowing when you're ovulating, but they can be expensive."

Julie emphasises there's no hard-and-fast rule about how often you should try insemination during each cycle. "What's possible will be determined by people's lifestyles and schedules. Every two days should be fine. We'd say, no more than

once a day, but the most important thing is not to get too hung up on it."

Counting the days

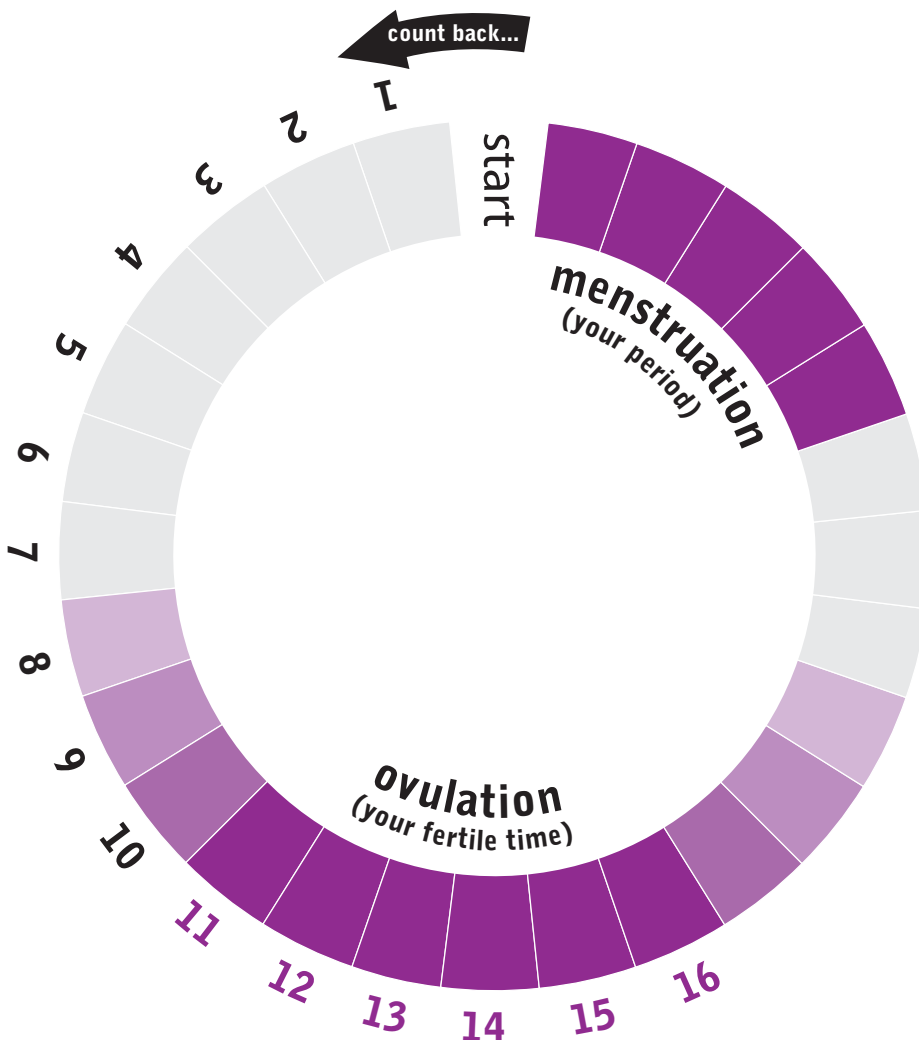
Noting down the dates of the beginning of each period will show you how long your menstrual cycle is. The average is 28 days, but many women have a shorter or longer cycle.

To get a rough idea of your fertile time:

1. Work out the date you are expecting your next period to begin.
2. Count back 16 days before this date.
3. Your fertile time begins around now and lasts five or six days.

Secretions

Changes in your vaginal secretions are another sign. At the beginning and end of your cycle, cervical mucus is creamy, sticky and thick. As your body prepares for ovulation, it becomes wetter, thinner, clearer and stretchy like raw egg white. ■



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not enough research

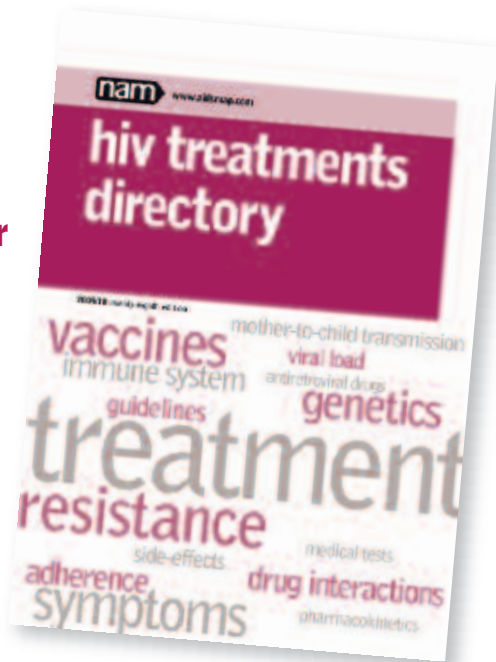
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