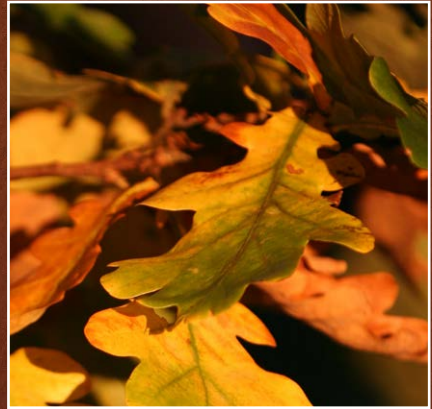
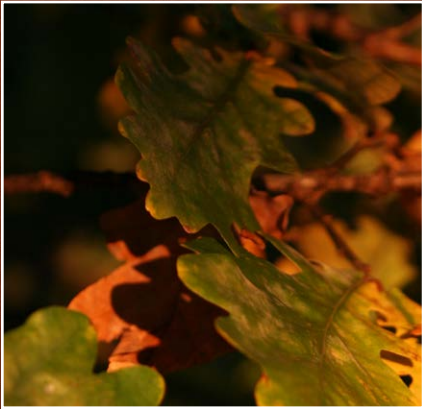


Coming of Age



a guide to ageing well with HIV



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new version
2014

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JUSTRI Slide is a free, online, searchable, downloadable slide library with many presentations about HIV and ageing.

Access them at **www.justrislide.com**

JUSTRI is a UK-based not-for-profit organisation, dedicated to providing resources and education for those with and working with HIV and viral hepatitis.

See our work at **www.justri.org**

Additional information is available at: **www.natap.org; www.aidsmap.com; www.i-base.info; www.hiv-druginteractions.org**

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“ I thought that I would be grown up when I was 30. I am now 58 and I have still not finished the growing thing. I am still thinking, loving, making terrible romantic and lifestyle mistakes – but I am still alive – and despite the burgeoning belly and the pelican chins wobbling in the wind, I still wear young man’s clothes, still go out with my friends, laugh and cry. I am very glad to be older, gay and alive.”

“ I’ve been getting very cross with articles that emphasise how people with HIV are going to die 10 to 15 years younger and be sicker than the average person if we do survive. I’m now 70, I still go dancing every week and my recipe for long life is always to think positively and to refuse to be a victim of HIV.”

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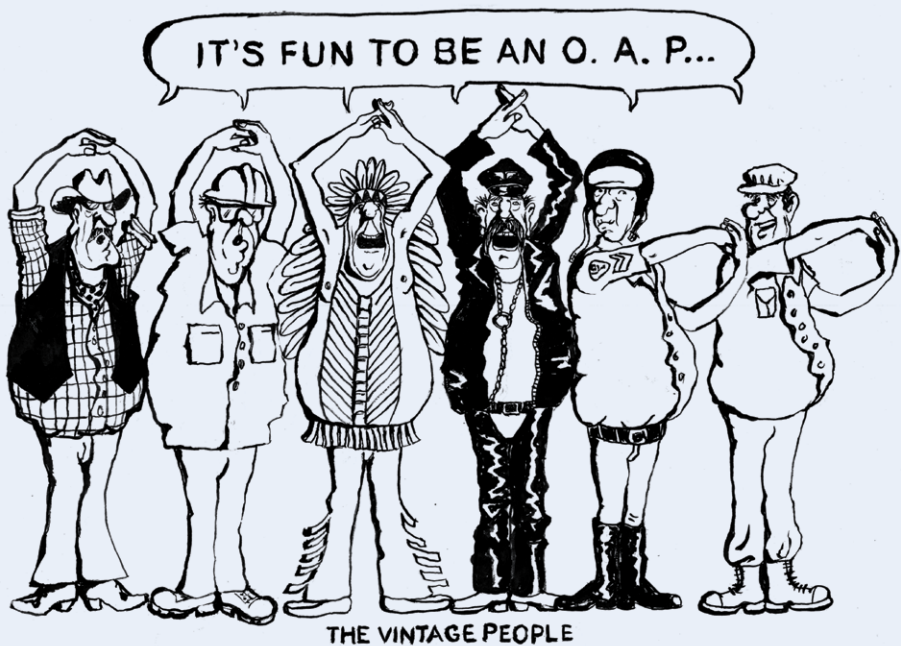
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Section 1

Introduction

Welcome to the third edition of the JUSTRI guide for people ageing with HIV infection.

Many people living with HIV, some for more than 25 years, are now entering the phase of life when the consequences of ageing become a reality. Other older individuals who have recently been diagnosed with HIV infection face the prospect of a new medical diagnosis to deal with as they age.

In the past, HIV infection meant that reaching conventional old age seemed unlikely. However, effective **antiretroviral therapy (ART)** has changed all of that. Increased life expectancy is shifting the focus in both healthcare monitoring and therapy to accommodate the overlap between age-related conditions and illness due to HIV infection, its complications and the side-effects of antiretroviral treatment.

The aim of this guide is to highlight the challenges of ageing with HIV and to provide practical advice.

How to Use This Guide

We hope that reading this guide will help those of you ageing with HIV to have a clearer understanding of the issues, and that by sharing the information with your friends, medical and other professionals and those who care for you your experience of ageing with HIV will be improved. The lines of communication between HIV treaters, patients and those who care for the elderly are opening up and this must continue to improve over time.

A large number of individuals living with HIV have contributed to this guide, as well as HIV doctors and other health professionals working in the field. JUSTRI has held several focus groups across the UK to help guide changes to this edition of 'Coming of Age'. References to other sources of information and relevant organisations have been included, both online and within the printed version. Explanations of medical terms are provided throughout the guide and there

is a **Glossary** at the back of the book. Words that are in the glossary are printed in bold when they first appear in the text, as above.

The subject of ageing with HIV infection is a new and dynamic field of constantly evolving information. Because of this we have not referenced recent scientific findings; however, there are many online sources in the **Further Information** section of this guide that provide a wealth of scientific and general information on HIV and Ageing. Don't be afraid of using the internet to find things out – most doctors do! As with all printed HIV information please check for up-dates to this guide, especially if reading this after December 2015, the latest version will always be online at **www.justri.org**.

We welcome comments, corrections and ideas or suggestions for inclusion in future editions; please send these to **home@justri.org**.

What is Ageing?

Ageing is the term used to describe the decline of physical ability (for example deterioration in hearing, sight or mobility), appearance (such as skin wrinkles or loss of hair) and/or mental agility (efficiency of retaining or processing old and new information) that we experience with advancing years. The process of ageing will progress at varying rates in different individuals for a variety

of genetic and environmental reasons. The ageing process can be quantified, at least medically, by measuring parameters such as heart, brain and kidney performance. Most body systems have a large excess capacity, and thus ageing without illness may impose little restriction on these functions, until what used to be known as 'a ripe old age'.

Natural History of Ageing

The ageing process begins at birth. For example, the thymus gland – the powerhouse of the immune system – already shows signs of ageing during the teenage years.

The capacity of most body systems is thought to decline by approximately 1% every year after the age of 25. However, as there is considerable reserve in most systems any deterioration may not affect well-being until a much older age. This begs the question – when are people old?

Geriatricians (medical specialists dealing with ageing), researchers and even government agencies all have different definitions of old age. Previously, research into ageing of the general population defined old age as above 75, older age at above 80 and oldest age beyond 85; i.e. significantly older than the biblical three score and ten. It is also true that due to better nutrition, improved public health and advances in medicine the general population is living longer each decade so these definitions will need to be revised over time.

HIV infection appears to contribute to the ageing process; by how much is as yet unclear and monitoring and interventions for ageing might need to begin at a much earlier age. Many HIV treatment guidelines now advise starting

therapy in anyone over the age of 50, and we have written this guide to be relevant to anyone with HIV infection over that age.

Research has shown that there is a link between **genes** (made up of **DNA**) and lifespan. This link may identify those whose genes make them susceptible to dying at a younger age. Genetic material is found in chromosomes and each one has a region at either end known as a telomere. When cells multiply these telomeres shorten, and since cells can only multiply when telomeres are present, they work as an inbuilt body clock which controls the lifespan of the cells and therefore of the body. The telomere length of an individual at a particular age with HIV infection may be shorter than that in uninfected individuals. Also given that telomere length seems to shorten more rapidly in infected individuals, it may be that HIV infection itself or the use of ART may hasten the ageing process.

It does seem that whatever a person's chronological age (age in years), their biological age (age determined by genetic and **environmental factors**) is more important in determining how long they live. This infers that it may become possible in the future to prevent or at least alter the rate of ageing.

HIV and Ageing

The ageing process in patients with HIV infection, whether on long-term ART or not, is still poorly understood and much research is underway.

Many abnormalities of the immune system associated with HIV infection are similar to those observed in ageing; these include a low **CD4 count**, high rates of immune activation, reduced activity of the thymus gland and shorter telomeres. In addition, another ageing process, known as oxidative stress, in which an excess of chemicals called **free radicals** compromises the immune system, appears to allow HIV to multiply more readily. This and other findings imply that HIV infection and the ageing process may exacerbate each other.

Long-term use of ART has meant that **AIDS**-related conditions now develop much less frequently due to the improvement in CD4 counts when HIV is suppressed. However, the consequent increase in life expectancy has resulted in other complications associated with ageing becoming more common. Several studies have concluded that the level of

CD4 count achieved on ART predicts the frequency of such complications, which are called comorbidities. They include liver disease; **cardiovascular disease (CVD)**, including high blood pressure, **stroke** and heart attacks; kidney disease; non-AIDS cancers; **osteoporosis**; decline in memory and other brain functions, as well as frailty.

The result of all of this is that HIV has been transformed into a complex chronic disease associated with multiple conditions, affecting many different body systems and requiring the attention and expertise of a wide range of healthcare specialists.

Geriatricians warn against the blind application of screening and treatment guidelines developed for younger patients being used when an older person has complex chronic disease. In the older patient with HIV, care should focus on the individual and their risk of illness, loss of function or quality of life from the spectrum of conditions they have or are likely to develop, i.e. treat them holistically.



Frailty

The word frailty conjures up a picture of weakness, vulnerability and disability, but also older age. Studies reveal that frailty increases with age and is greater in women than men, though the reasons for this remain unclear. Frailty is associated with high rates of long-term diseases and disability and relates directly to risk of dying. It is thought that this is due to a continuing underlying process of inflammation within multiple body systems, as well as poorer general health.

The frailty syndrome is a combination of fatigue and weakness, a slowing of physical and mental agility and a loss of height that represents a gradual disintegration of the spine, all evident over time. It is worsened by each period of physical or mental stress and associated with an inability to regain health after an acute event, such as an infection or a fall.

In relation to older people with HIV infection, studies have shown that having a low CD4 count is associated with frailty, but as yet there is no association with any specific ART combination. It also seems that compared to men without HIV infection and of a similar age and

ethnic group, those infected with HIV are more likely to have the frailty syndrome. The longer the duration of infection, the greater the likelihood of frailty, so that, in one study, a 55-year-old man infected with HIV for more than 4 years is likely to be as frail as an uninfected man aged 65.

Further research is needed to establish the exact relationship between frailty and HIV infection and the definition may need to be different for those with or without HIV. Research is also necessary to assess ways to reduce the impact and manage risk factors for frailty. Looking at functional capacity may be a more useful measure as initial findings have suggested that those with HIV may be functionally more impaired than those of an equivalent age but who are uninfected.

There are many other factors which make older adults with HIV atypical of the general ageing population. They have higher rates of depression and thoughts of suicide, more use alcohol, tobacco and recreational drugs and a high proportion live alone or are socially isolated or ostracized due to their HIV status. These and other issues will be addressed in the next sections of this guide.



Section 2

Ageing Well

“ Age is the most unexpected of all things that happens to a man.”

Leon Trotsky (1879—1940), Russian Marxist theorist

“ You don’t stop playing because you are old. You become old because you stop playing.”

George Bernard Shaw (1856—1950), Irish playwright

“ If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health.”

Hippocrates (460—370BC), Greek physician

Planning in Advance

It is not possible to predict the future but it is possible to plan for a healthier old age. Research indicates that only a proportion of **longevity** (length of life) is genetically determined, whilst the bulk of it depends on lifestyle and environmental factors (external determinants such as infections, sunlight or accidents).

Therefore, to a certain extent, each individual can somewhat influence this process by what they do and how they choose to live. Planning for older living should include the recognition and acceptance of your capacity and a regular review of how your own personal lifestyle can be improved.

Working versus Retiring

The era of steady employment after school or college, working until retirement age and living out a dotage is becoming less common. People with HIV infection, especially those diagnosed prior to the era of ART, have often worked only sporadically or have retired early. Now that life expectancy has increased, many individuals are choosing to train for a new career, or to return to an old one, either full or part-time. Apart from the obvious financial rewards, this can bring physical, mental and social benefits.

What constitutes as work varies across a whole spectrum of opportunity

between full employment and part-time volunteering; however, all these activities can help to improve quality of life. There is robust evidence that ongoing mental and physical activity throughout life has a significant impact in prolonging both quantity and quality of life and in reducing illness. It is nonetheless important to establish a balance to ensure that continued employment is not physically and mentally stressful, and therefore detrimental to health. Equally, it is important that retirement does not lead to a reduction in physical, mental and social stimulation or an increase in isolation.

Wellness Checklist

Daily

1. Could I exercise more today?
2. Have I bought the right food?
3. Should I drink less alcohol today?
4. Am I doing the right things to help me sleep properly?
5. Am I doing something new today?
6. Am I keeping my brain active?

Weekly

1. Am I doing something nice with a friend this week?
2. What is my weight and is it changing?
3. Have I planned an active weekend?
4. Am I eating healthily?

Every three to four months

1. Do I feel well or unwell?
2. Have I had my check up at the clinic?
3. What are my blood results?
4. Have I stopped smoking?
5. Are my finances in order?
6. How has my mood been recently?
7. What are my plans for the next few months?

Staying in Control

No matter how good the preparation may have been, the physical and mental changes that accompany growing old demand lifestyle adjustments. Once the wrinkles have appeared, the next common sign of ageing in otherwise healthy individuals is often deteriorating eyesight; stylish eyewear can make this easier for some. However, becoming forgetful or needing to use hearing or walking aids can lead to mood changes such as anxiety and/or depression. Dependence increasingly replaces independence for many older people and it is important to be aware of the resources available to ease any particular encroaching disability.

HIV infection has in the past often left people dependent for prolonged periods of time, resulting in loss of control of their lives and livelihood. Fortunately, ART now allows a near normal life for many, although side effects of HIV treatments are still relatively common. The signs and symptoms of premature ageing now seen in HIV infection may seem to be undoing all this progress. However, awareness of ageing, including informed choices made in conjunction with health professionals, and continual review of your lifestyle and healthcare, can help to maintain your quality of life and potentially improve life expectancy. It may be useful to devise a personal checklist to follow, to improve your

life and general well-being (**see opposite page**).

HIV clinics, hospital outpatient departments and GP surgeries are essential resources for people wishing to remain in control of their health.

These are even more relevant as old age encroaches and new conditions (either HIV-associated or not) develop. Individuals' medical histories are all different and some are more complex than others. As your healthcare gets more complicated, it is vital that you identify who is in charge of your care. Work with your doctor to make sure all other health professionals are fully informed and aware of your HIV status, all medications you are on and the reasons for taking them, results of blood and other investigations and the ongoing plan for your care. Ask for copies of letters to be sent to you so that you can check that communication is happening. Electronic records making vital healthcare information accessible to all health professionals nationally have yet to be properly established, although most GPs already use them. In the meantime, it could be helpful to carry a small booklet summarising important aspects of care and medication and what tests you have had and when they need repeating. One is available as the Treatment Passport on the HIV i-Base website, **www.i-base.info**.

“Worry gives a small thing a big shadow.”

Swedish proverb

“Our society must make it right and possible for old people not to fear the young or be deserted by them, for the test of a civilization is the way that it cares for its helpless members.”

Pearl S Buck (1892—1973), American authoress

Coping with the Psychological Issues of Ageing with HIV

Ageing is increasingly associated with illness and disability, either or both of which may result in a diminished social circle and support network. The loss of family, friends or loved ones due to illness or death also increases with age. This coupled with the loss of previous lifestyle and occupation may separately or together result in low mood, depression and may even lead to despair and suicidal thoughts. HIV infection *per se* brings with it also the added stresses of isolation, stigma and additional illness.

Stress can negatively impact on both physical and mental health. It can impair the way we think (**cognitive function**), a problem also seen in ageing, with or without HIV infection. It can also produce depression, anxiety and exacerbate illness in general. Relationships, especially those that are close, often bear the brunt of a person's stress.

It is well established that psychological and psychiatric illness is commoner in those with HIV infection than in the general population. Medications, including ART and those for treatment of hepatitis C (HCV), and also many recreational drugs including alcohol may result in anxiety, depression and mental illness, such as paranoia or psychosis. These possible causes should be diagnosed and treated before referral to counselling, psychology or psychiatry services is made, or before anti-depressant or other psychiatric medication is started. HIV clinics and

GP surgeries can make referrals to a suitable support service and some HIV clinics have in-house psychologists and psychiatrists. In addition, many HIV patient groups outside the NHS have counsellors/psychotherapists available at short notice. Nurses and occupational therapists working in the community can help integrate treatment to include psychological support, which can also be delivered in the home.

Psychological interventions in general help individuals to negotiate challenges. The type of therapy given may take the form of cognitive behaviour therapy (CBT); mindfulness and relaxation techniques; person-centred, humanist, integrative, psychodynamic and psychoanalytic psychotherapy; relationship counselling; motivational classes or group therapy of various types. Social interaction and support is also of critical importance in addressing depression and other psychological challenges of HIV.

Individuals will respond variously to different psychological approaches, techniques and theories. Evidence shows that the degree of trust achieved between therapist and client is vital for success as are the therapist's interpersonal skills. Just because you don't get benefit from the first person you meet and discuss your problems with should not put you off from seeking help elsewhere.

“ When a lovely flame dies, smoke gets in your eyes.”

Otto Harbach (1873—1963), American songwriter

Methods to stop smoking

These will be most successful with good planning, either with your doctor or through a smoking cessation programme

Nicotine replacement: comes in various forms such as patches, lozenges, inhalers (including electronic cigarettes) or gum available in all pharmacies and do not require a prescription. Studies show that nicotine replacement helps people to stop smoking.

Champix (varenicline): is a tablet that provides relief from cravings and withdrawal symptoms and doubles the odds of stopping smoking compared with the other oral medications available. Champix works on the pleasure centre of the brain to cut the satisfaction smokers get from smoking a cigarette. This means that if you have a lapse and smoke a cigarette you will find it less enjoyable and are more likely to continue to quit.

Zyban (bupropion): this tablet was first used to treat depression but was then found to be useful in helping people to stop smoking, regardless

of whether or not the person trying to stop was actually depressed. The tablets are usually taken before stopping smoking, with a stop smoking date set in the first fortnight of starting the tablets.

Hypnosis: aids relaxation and encourages the suggestion that it is possible to stop smoking. It has variable success in helping people stop smoking but is highly successful for some people.

Acupuncture: is believed to help trigger the release of endorphins, a naturally occurring form of morphine, thereby helping people to more easily negotiate the withdrawal symptoms of stopping smoking.

Behavioural therapy: addresses the psychological aspect of addiction and helps to change the automatic nature of craving tobacco and the habitual patterns of smokers.

Smoking and How to Stop

Smoking tobacco is extremely damaging to your health and well-being and the nicotine it contains makes it addictive. There does not appear to be a direct effect of tobacco smoking on HIV itself, but when the immune system is compromised, smokers with HIV infection

may be more prone to developing chest diseases, including infections and lung cancer, or liver cancer if also infected with HCV. It also shortens your telomeres more than HIV. If there is one thing you can do to reduce health problems as you age it is to quit smoking!

HIV-Infected Smokers vs. HIV-Infected Non-smokers

- Certain conditions that occur with HIV infection, such as oral thrush, are more common in people with HIV infection who smoke than those who do not.
- Smoking-related conditions affecting the lungs, such as emphysema and lung cancer, occur more frequently in smokers with HIV infection than in non-smokers and the rates are rising.
- The AIDS-defining pneumonia, **PCP**, is three times more likely to occur in smokers.
- In the general population, there is very good evidence that smoking tobacco increases the risk of heart disease, stroke and high blood pressure and this risk is increased in those with HIV infection. Therefore, smoking with HIV infection further

increases the risk of these conditions and ageing increases the risk yet further.

Stopping smoking is difficult since the addiction is both physical and psychological. Nicotine replacement in various forms may reduce cravings but in many cases specific medication is necessary. Sometimes a more holistic approach, such as group or individual therapy, helps and there is good evidence to show that replacement medication supplemented by group and/or individual therapy is often the most successful approach.

The NHS has many smoking cessation programmes based in hospitals, GP surgeries and in the community, and if you smoke you should refer yourself to these.

STOP SMOKING NOW, PLEASE

“ The more I seem to get older, the more it seems to go worse. At 56 now, I shouldn’t be doing this. I shouldn’t be going out grafting and then running round like a 19-year-old scally looking for heroin and coke. Like, I shouldn’t even be on methadone now. It’s madness.”

Anonymous drug user quoted on BBC News 2010

“ There are more old wine drinkers than old doctors.”

François Rabelais (1495—1553), French physician

Alcohol and Other Recreational Drugs

Alcohol

Alcohol is well known to be addictive, and consistent excess consumption can result in deterioration of your liver and heart function, thinning of the bones and impairment of brain function, especially memory and co-ordination. Much of this damage occurs with both age and HIV infection and drinking too much is likely to make things even worse.

Deaths in the UK related to drinking alcohol are second only to those caused by smoking. Alcohol, in moderate amounts, enhances relaxation and social integration. However, in large quantities it alters mood, interferes with physical co-ordination and can cause vomiting and diarrhoea, as well as acute alcohol poisoning, a medical emergency. Tolerance to alcohol develops as you drink more and can lead to addiction and alcoholism.

Research has shown that persistent excess alcohol consumption may reduce the efficiency of the immune system, leading to lower CD4 counts. It also impacts on brain function in the long

term. While there is no evidence that there are direct effects of moderate alcohol intake on either ageing or HIV infection, drinking does have negative effects on your immune system so it's important to keep it to a relatively low level.

If you have liver damage, such as that caused by hepatitis B (HBV) or hepatitis C (HCV), or a fatty liver (common in those who are obese or as a side effect of some antiretrovirals), the advice from your doctor may be to stop drinking alcohol completely or at least markedly reduce it to help limit further damage. You may find that when taking ART your tolerance to alcohol decreases as some antiretrovirals are processed by the same pathways in the liver as alcohol. In addition, inebriation may also interfere with your adherence. So, sensible alcohol consumption is recommended, and if you think you are drinking too much then discuss this with your doctor or someone you trust.



Cannabis & other recreational drugs

It is well documented that cannabis has medicinal properties. It is used by people with and without HIV infection to relieve pain, especially that of **peripheral neuropathy**, and to reduce anxiety and insomnia; however, currently it remains an illegal substance.

The effects of long-term cannabis use that are of most concern are heart disease, damage to the lungs due to asthma and bronchitis, and significant mental illness including depression and psychosis. Ageing and HIV infection both adversely affect the lungs and heart and prolonged cannabis use may make these factors even worse.

Other recreational drugs such as cocaine, methamphetamine (crystal meth), ecstasy, ketamine and GHB/GBL have various, sometimes serious mental and physical consequences. Most importantly their use may impact on adherence to HIV medication and may consequently

give rise to resistance to ART. Excessive use of some of these drugs can lead to deterioration in mental health, including cognitive function and memory loss, as well as anxiety, paranoia and depression which may be suicidal; some of these changes may be irreversible. There can also be important interactions between antiretrovirals and recreational drugs, which may result in serious illness or even death. GHB, for example, can interact with ritonavir leading to much higher GHB levels, which can cause difficulty breathing.

In an ageing person with HIV infection, when these risks are already increased, imprudent drug use may exacerbate this further. Research suggests that older gay men continue to take recreational drugs much more frequently than the general population and it's important to discuss your use and any questions about drug-taking with your doctor or someone else at your HIV clinic.

Type of Exercise	Benefits
General movement such as walking briskly, climbing stairs	Improves physical capacity, heart and lung function as well as keeping your body flexible
Yoga, Pilates, daily stretching	Improves flexibility and muscle tone
Aerobic exercise such as jogging, swimming and cycling	Improves heart and lung function and strengthens bones
Weight/resistance training	Increases muscle size, physical endurance and bone and joint strength

All of these forms of exercise are beneficial; however a combination of them as a balanced exercise programme is even better; the aim is to exercise regularly rather than not do any at all.

Exercise: What Type and How Much

We all know that regular exercise promotes well-being. This is of increasing importance as we age or deal with illness. As muscles, joints and bones age, along with the negative effects of HIV infection and ART, they may become more susceptible to injury and repair less easily and more slowly. Therefore exercise regimes should be tailored to suit the individual and designed to avoid injury, especially when starting or increasing any type of exercise.

Benefits from exercise include improved mood, better immune function and of course the feel- and look-good factor. In addition, there is robust evidence that exercise lowers blood pressure, reduces **insulin resistance** (thereby slowing the development of **type-2 diabetes**) and lowers total cholesterol levels whilst increasing the good cholesterol component known as **high-density lipoprotein (HDL)**.

Body shape changes as a result of HIV infection and/or medication can be improved by exercise, especially in conjunction with a balanced diet; this can help to reduce the fat that accumulates especially around the waist area. Such fat

accumulation predisposes to diabetes, and both the lowering of cholesterol and reduction in body fat also help reduce the risk of heart disease.

When planning an exercise programme, advice from a professional such as a personal trainer, physiotherapist or osteopath can be very helpful. It is important to plan your exercise regime around your meal times, and dieticians can advise about the best foods to eat before and after exercise.

Regular low-level exercise is an excellent way to start off a programme to avoid excessive stress on your cardiovascular system. For example, 30-60 minutes of brisk walking as part of an integrated daily regime will promote aerobic fitness and is unlikely to provoke injury even if someone is particularly unfit. Weight training, also known as resistance training, is the best way to promote healthy bones and to increase muscle mass.

Referral to an exercise programme can be organised by most health professionals and certain gyms offer special programmes at reduced cost for people with HIV infection.

“ As the doctors say of a wasting disease, to start with it is easy to cure but difficult to diagnose; after a time it becomes easy to diagnose but difficult to cure.”

Niccolo Machiavelli (1469—1527), Italian Renaissance writer

Be vigilant about alterations to your body

Body Shape Changes

As we age our body shape alters, the commonest signs being wrinkles and everything 'going south'. Most of us see an increase in our waist size whilst losing padding elsewhere, such as on the bottom; arms and legs become thinner and our muscle bulk reduces. A lot of this is due to changes in where we store fluid in the body, which plumps up the tissues and is gradually lost during the ageing process. However, another syndrome involving body shape changes, **lipodystrophy**, can occur in HIV infection and presents itself in two main ways, either as lipoatrophy (fat loss) or as lipohypertrophy (fat gain), sometimes seen together in the same person.

A number of factors are thought to contribute to the syndrome: ART (some drugs are more implicated than others, especially some of those we no longer use), the lowest ever CD4 count you had, poor diet, family history (genetics) and smoking. Lipodystrophy also occurs with the ageing process.

Facial lipoatrophy describes loss of the cheek fat pads and around the temple area. This is now seen by some as a hallmark of HIV infection, and can lead to stigma and loss of self-esteem.

Lipoatrophy can also affect other parts of the body and can mimic the fat loss that occurs with ageing on the arms, legs, feet and buttocks.

Lipohypertrophy is the accumulation of fat that occurs within the body around the internal organs and, more obviously, in the breasts of both men and women, and around the waistline. This also occurs with ageing and diabetes, which must be

tested for and ruled out. It can be difficult to distinguish lipohypertrophy from simple weight gain and there is no single test to determine this. Starting HIV therapy leads to a 'return to health' and this often results in weight gain, not always in the places you want it.

Evidence about which drugs are better or worse for lipodystrophy is constantly emerging and your doctor can advise on the latest science as to which treatment may be helpful to switch to, although this may change over time with new data being published.

Exercise does help somewhat but in true lipohypertrophy, residual fat remains around the waistline and the breasts in most people. Weight training, also called resistance training, may help to restore muscle bulk in the arms and legs.

Lipoatrophy involving the buttocks may make certain sitting positions uncomfortable, and sleeping and bathing may be difficult. Padded underwear (cycling shorts are quite effective) and blow-up sitting rings are available and often help. These can be provided by an occupational therapist, along with other aids to reduce the impact of lipodystrophy.

Cosmetic treatments (skin fillers) for facial lipoatrophy in HIV have been used successfully for some time in HIV clinics and are also available in the private medical sector and certainly help to reduce the obvious signs of facial fat loss.

It is of vital importance that health professionals work to promote formal and informal relationships across the spectrum of community and hospital specialities, to ensure seamless care for people with HIV infection and their carers. Specialist HIV nurses are a vital link, especially in areas where there are not many people living with HIV.

Community Nursing and Occupational Therapy

Community nursing

The role of the specialist community HIV nurse is to bridge the gap between HIV clinics, other specialist units, GPs and generic services within the community. This includes facilitating transition from someone being an inpatient to how they are followed up in the outpatient clinic, to their care at home, by establishing networks of communication and support between the hospital and various community teams. Ageing and HIV infection often result in complex health needs, involving lots of people and it is vital to ensure that HIV infection is not a cause for stigma or isolation and that individuals get the best of care in the community as well as in hospital.

Home assessments can highlight issues that may not have been obvious previously, such as problems with mobility in the home and inability to access a good diet, both of which are detrimental and may affect adherence to medication. Community HIV nurses are ideally placed to work with carers, family, friends and loved ones, as well as GPs, district nursing teams and occupational therapists and physiotherapists for the benefit of the HIV patient. Not only does this help to increase community knowledge about HIV infection and its treatment and management, but also establishes holistic care. If an HIV patient develops cancer then the Macmillan Cancer Nurses should be involved for their expertise in this area.

Occupational Therapy

Occupational therapists (OTs) provide physical, psychological and social support. They work across all settings including acute hospitals, rehabilitation centres, with social service teams, in the community and as part of hospital-at-home. An OT will assess the ability of an individual to perform **activities of daily living (ADLs)** and establish the extent to which these may be impaired by physical or psychological factors due to HIV, ageing or both. OTs may support a change of housing, provide equipment to maximise ADLs which might include

major and/or minor changes in the home, or simply help improve comfort levels for sleeping, bathing, walking, etc.

Anxiety, depression and cognitive function decline as a result of HIV infection, some medications and/or ageing may also be assessed by an OT. Practical measures, such as diaries and memory aids, and advice on how to prioritise and to pace ADLs, and so prevent distress and anxiety, are part of an OT treatment package.



Physiotherapy and Osteopathy

Physiotherapy

Physiotherapy (sometimes called physical therapy) provides treatment to restore, develop and maintain maximum movement and function throughout life, irrespective of whether the problem area is due to injury, disease, HIV, ageing or wear and tear.

In particular, physiotherapists treat neuromuscular conditions (where the brain and nervous system are not properly working together), musculoskeletal (muscle, joint, ligament and tendon) conditions as well as osteoporosis and also conditions that

affect the heart and the lungs. Neck and back pain are the two commonest problems treated by physiotherapists.

Joint and spine mobilisation and/or manipulation and therapeutic exercises including stretching and massage are used to slowly re-educate muscles that have fallen out of use. In some cases hot or cold packs, electrical muscle stimulation, ultrasound and hydrotherapy may be used to speed recovery, and some physiotherapists also use acupuncture.

Osteopathy

Osteopathy is used to prevent, diagnose and treat joint, muscle and ligament conditions and to help the body to heal itself. As a holistic treatment, assessment for osteopathy includes medical and lifestyle history, personal circumstances, an examination of posture that includes sitting, standing and walking, and alignment of muscles and joints.

Osteopathy may be used as a complementary treatment (one given alongside conventional treatments). It is used for conditions such as:

- Low back pain
- Neck pain

- Arthritis
- Sports injuries
- Restricted mobility
- Occupational ill-health

In osteopathy a variety of mostly gentle manual techniques are used, depending on age, fitness and diagnosis. These include massage to relax stiff muscles, stretching to aid joint mobility and manipulation. Osteopathy has limited availability on the NHS, although some HIV clinics provide it, but it can be accessed easily in the private sector.

“ Drop, drop, slow tears, and bathe those beauteous feet, which brought from Heaven the news and Prince of Peace.”

Phineas Fletcher (1582—1650), English clergyman and poet

Podiatry and Foot-Care Services

A podiatrist (or a chiropodist) is someone trained to deal with the prevention, diagnosis, treatment and rehabilitation of abnormal conditions of the feet and lower limbs. Ageing brings with it many foot problems, including circulation issues, difficulty in bending to cut nails and the complications of joint deformities that may arise from arthritis and/or be exacerbated by wearing badly fitting foot wear. Podiatrists work with GPs and specialist Foot Clinics in hospitals as well as in the private sector.

Foot-care complications of

HIV include:

- Conditions like diabetes, psoriasis and peripheral neuropathy in which the feeling in the feet is reduced, thereby making them more vulnerable to injury
- Degenerative changes resulting from bone and joint disorders such as arthritis, and skin and muscle problems due to nerve and blood vessel damage from smoking, diabetes or heart disease

- A wide range of skin and nail disorders, such as corns, calluses and in-growing toenails
- Foot and nail infections, especially fungal infections, which are very common in HIV infection, and warts or verrucae, which can be quite resistant to treatment
- Ulceration caused by diabetes, often treated in conjunction with a specialist diabetic nurse or clinic

Podiatrists can provide painless and effective treatment for foot problems, an important role in maintaining the mobility of elderly and disabled people, especially those who are unable to reach their feet. They can also advise on foot health and provide orthoses (custom-made shoe inserts) made specifically to reduce an abnormality in the foot, and/or to prevent further damage and help make walking more comfortable.

Guide to Good Oral Hygiene

Brush teeth daily: most dentists recommend brushing teeth at least once and preferably twice daily. Vigorous brushing is not advised as this may damage your gums, causing them to bleed and to recede; instead gentle circular brushing for at least two minutes is recommended, attending to all teeth, front and back.

Invest in a decent toothbrush: electric toothbrushes may be easier for some people to use, but they need to be used correctly and regularly. Most toothbrushes come with instructions on when they need to be replaced. Brushing with an old toothbrush often results in harder brushing to gain the same level of cleanliness and can result in added damage to the gums.

Flossing: as you age your gums recede and flossing can help to delay this process. It is important that you use the right technique to floss; dentists and/or dental hygienists can advise on the best method to use.

Toothpaste should contain fluoride: this natural mineral, found in many foods and in some drinking water, strengthens tooth enamel, making it more resistant to tooth decay. Plaque constantly forms on your teeth and fluoride can reduce its production.

Mouthwash: most mouthwashes contain fluoride, helping to reduce plaque. Some mouthwashes, however, contain alcohol as a preservative and may produce an unpleasant burning sensation on receding gums. Alcohol-free mouthwash is available and appears to be just as effective.

Visit your dentist and hygienist regularly and if you don't have one, get one. It is vitally important to remember that teeth and gums are affected by the ageing process as well as by HIV infection, so twice the reason to look after them. Remember your mouth and teeth are used for all sorts of things on a daily basis, not least for eating and smiling.

Mouth and Dental Hygiene

Dental problems are common at all ages but wear and tear on the teeth and gums over the years increases as you age. Untreated HIV infection can give rise to oral symptoms that indicate immune system deterioration, such as **oral Candida (thrush)** and mouth ulcers.

Plaque, made up of bacteria and food debris, causes areas of tooth decay, which can lead to cavities and gingivitis (gum disease). Cavities should be dealt with as early as possible, as larger ones may result in the spread of infection, dental abscesses and possible loss of teeth. Teeth are not directly affected by HIV infection, but it remains unclear whether the bone structure supporting the teeth is affected by HIV or ART-related osteoporosis (thinning of the bones).

A weakened immune system resulting from either ageing, HIV infection or both may affect the type and severity of disease within the mouth or gums such as gingivitis or gum recession. Diabetes, excessive alcohol use and some recreational drugs can also cause gum disease. It is well recognised that the best way to keep your mouth healthy is to maintain good oral hygiene.

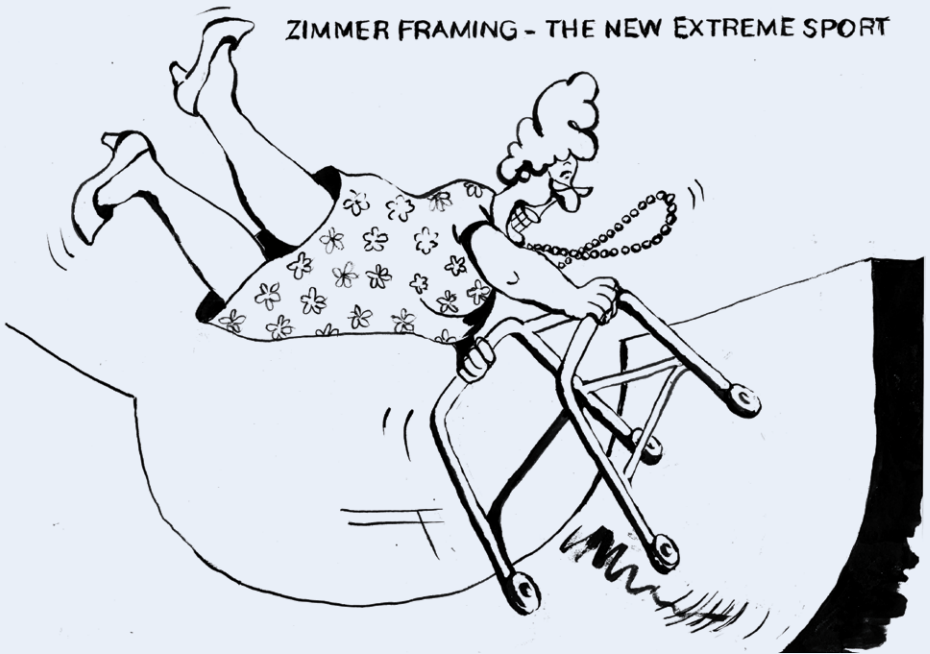
Herpes simplex virus (HSV), which produces cold sores on the lips, may also lead to blisters and ulcers in the mouth.

Saliva is extremely important in maintaining oral hygiene and a dry mouth is not only unpleasant but also predisposes to tooth decay. Some medications used to treat HIV infection, high blood pressure, depression and hepatitis B and C can cause a dry mouth. If this is troublesome, citrus juice or sweets and artificial saliva may help, but if it is persistent you may need to change the offending drug.

All dental procedures, including tooth replacement, are safe to perform in people with HIV infection irrespective of age. If drug therapy is necessary or an anaesthetic is required it is important that your dentist is aware of any medications you are taking, including ART, as some dangerous interactions exist.

The most important thing is to find a dentist you like and to see them regularly.

ZIMMER FRAMING - THE NEW EXTREME SPORT



Section 3

Aspects of Medical Care

Things you can do to reduce the risk of CVD

Treat high blood pressure: this is essential to reduce the risk of stroke with ageing. The choice of blood pressure medication should take into account drug interactions with HIV therapy.

Weight control: obesity is a risk factor for both CVD and high blood pressure. Ageing causes the proportion of fat in the body to increase and muscle mass to reduce, and body shape is important because the place in which fat accumulates is an indicator for risk of disease. For example, in men a waist measurement of over 37" (94cm) and in women over 31½" (80cm) predicts a risk of developing diabetes. HIV disease and ART may also exacerbate body fat changes. A diet that is low in fat and moderate in carbohydrate and protein is essential, as is regular exercise.

Diabetes: ageing is associated with a disturbance in the way glucose is processed and this can lead to diabetes. Diet and exercise help prevent and avoid the necessity of treatment with yet more medication.

Reduction of cholesterol: some ART causes abnormal processing of lipids. The longer a person is on these medications, the greater the exposure to this risk factor as that person ages. Choice of ART is therefore very important.

Smoking cessation: this is crucial to reduce your risk of CVD. Nicotine replacement therapy or tablets are available through most doctors' surgeries.

Physical activity: there is increasingly strong evidence that exercise helps to reduce many of the effects and diseases of ageing. Exercise helps to maintain muscle mass, reduces the severity and frequency of depressive episodes and has a feel-good as well as look-good factor.

Alcohol consumption: moderate alcohol intake has long been shown to have a protective effect on the heart. However, an excess of alcohol may add significant calories to a diet leading to excess weight and an increase in blood pressure. It may also affect the way in which fat is processed in the body, which in turn is aggravated by both HIV infection and antiretroviral medication. In addition, brain function declines at variable rates with age and alcohol may speed up this process.

Heart and Circulation: Cardiology

Cardiovascular disease (CVD) is the commonest cause of death globally and 80 per cent of deaths due to CVD occur in individuals over the age of 65. Whilst it is associated with ageing, other risk factors are important. Some of these can be altered, such as stopping smoking.

CVD in HIV can occur at an earlier age than in non-HIV-infected individuals and it is therefore very important to attend to these modifiable risk factors whenever patients first present. CVD encompasses coronary heart disease (blockage of arteries that supply the heart and heart muscle itself), which can lead to chest pain (angina) and acute heart attacks (**myocardial infarction**). CVD also includes cerebrovascular disease, including cerebrovascular accidents (CVAs), often called **stroke**, which can

be due to either bleeding into the brain or damage due to a blood clot reducing blood supply to the brain. Ageing causes arteries to stiffen and harden through a process called **atherosclerosis** in which fat deposits called plaques can narrow or block the blood vessels, reducing blood flow to the heart muscle, the brain and other tissues. In addition, the valves of the heart may weaken whilst its wall can thicken, both leading to lower efficiency of this vital organ.

Risk factors for cardiovascular disease include:

- Ageing
- Smoking
- Obesity
- High blood pressure
- Diabetes
- Family history of CVD or diabetes
- Male gender
- Non-Caucasian ethnicity
- Lack of exercise
- Excess alcohol or other recreational drugs, especially cocaine and amphetamines
- HIV infection
- Some antiretroviral medications

Some CVD risk factors can be modified, others, such as ageing, gender, ethnicity and family history of heart disease or diabetes, cannot. The older one gets, the greater the risk of CVD. Men are more at risk than women until after the menopause when there is a sharp increase in the risk of CVD for women. Individuals of South Asian descent have a higher risk than Caucasians. If one of your blood relatives has had angina, a heart attack or a stroke before the age of 50, there may be a genetic link; report this to your doctor as you may have an increased risk of developing CVD.

Cardiovascular risk assessments can help to calculate the short- and long-term risk of developing CVD and several scoring systems are commonly used for this purpose including the Framingham and Q risk assessment tools.

It is acknowledged that these scoring systems are not as accurate in some patient populations; specifically, they may underestimate CVD in HIV patients. However, they can certainly predict those at greatest risk of CVD.

These CV risk assessments are usually performed by a trained nurse or doctor. Assessing your heart and circulation is complex and it's important to get expert advice, which may be provided through a dedicated cardiology or lipid clinic linked to or sited within your hospital.

Checking your blood pressure and the levels of fats (lipids) in your blood can help measure your risk of a heart condition.

Guidelines suggest that having the following fasting blood lipid levels reduces the risk of cardiovascular disease:

- **Total cholesterol (TC)** under (<) 5mmol/L, <4mmol/L is better
- **Low density lipoproteins (LDL)** <3mmol/L, <2mmol/L is even better
- **High density lipoproteins (HDL)** >1mmol/L begins to be protective

It is important to always have these tests done when you are fasted – this means nothing to eat and only clear fluids (no milk or sugar) for 12 hours before the blood is taken.

Lipids: Biochemistry

Fats (lipids) are absorbed by the digestive system and converted into a form that may be stored and used as an energy source; some are also produced within the liver.

These are essential for a healthy life and are involved in the maintenance of muscles and bones as well as being necessary for normal brain function. Lipids come in good and bad forms in terms of increasing or decreasing the risk of CVD and other conditions. It is known that some antiretrovirals may increase the levels of bad fats and so regular monitoring of lipid levels is essential, both before starting and while on HIV therapy. There are two main types of lipids, referred to as cholesterol and triglycerides.

Cholesterol is divided into different types. High density lipoprotein (HDL) binds to cholesterol and removes it from the body and is therefore known as good cholesterol, whilst **low density lipoprotein (LDL)** carries the cholesterol around the body where it can be deposited in blood vessels and is known as bad cholesterol. Abnormally high levels of total cholesterol and LDL are implicated in heart disease.

Triglycerides (TG) are found in the blood stream and abnormally high levels may result in heart disease, inflammation of the pancreas (pancreatitis) and type-2 diabetes.

Blood tests to measure lipid levels include total cholesterol, HDL and TG levels;

LDL levels are calculated by taking the HDL and TG values away from the total cholesterol. Fasting samples of blood (nothing should be eaten and only water drunk for the 12 hours before the blood sample is taken) are important, since eating a meal gives abnormally high levels of lipids if your blood is taken soon after. Blood cholesterol levels increase in both men and women with age but if LDL levels can be lowered and HDL levels increased, the risk for cardiovascular disease may be reduced.

Your HIV doctor and/or cardiologist or lipid doctor should monitor your blood pressure, lipids and risk for stroke regularly and advise you on any necessary changes to lifestyle and/or medication. Studies have shown that giving cholesterol-lowering drugs to the general ageing population without HIV infection is highly beneficial in reducing heart disease. There are a range of medications used to treat the different types of abnormal cholesterol and TG, the most common ones being statins and fibrates. In HIV infection, extreme care must be taken to choose a statin that will not interact with your ART, this being one of the reasons that the different doctors looking after you must maintain good communication with each other as well as with you.

Risk factors for developing type-2 diabetes include:

Ageing: causes the proportion of fat in the body to increase and the muscle mass to reduce. Body shape changes are important because where fat accumulates is an indicator of risk of diabetes

Obesity: maintaining weight within the range ideal for your sex, height and age as calculated by the **Body Mass Index (BMI)** score [appendix 2], is important to reduce the risk of type-2 diabetes

HIV medication: can predispose to the development of type-2 diabetes

and certain drugs are implicated more than others. However, the more recently developed antiretrovirals tend to have a lower risk

Family history: if you have a blood relative with type-2 diabetes you are likely to be at an increased risk of developing the condition yourself

Smoking: as well as all the other bad things it does, smoking can also raise blood glucose levels so stopping smoking is vital

The Ebers papyrus (named after a German Egyptologist) mentions a remedy for excessive urination, a common symptom of diabetes:

“ A measuring glass filled with water from the bird pond, elderberry, fibres of the Asit plant, fresh milk, beer-swill, flower of the cucumber, and green dates.”

Egyptian papyrus c.1550 BC

Diabetes

Diabetes occurs when the body is unable to efficiently process glucose (sugar) in the blood. Diabetes commonly develops in older individuals, especially those who are obese.

There are two types of diabetes, type-1 diabetes which most often develops before the age of 20 and the one which develops as we grow older, type-2 diabetes, often called maturity-onset diabetes. They are both due to an insufficient production in the pancreas of insulin, the hormone that processes glucose, or a lack of response by the body to the insulin being produced (insulin resistance).

Diabetes can cause damage to a number of body systems:

- Cardiovascular (heart and blood vessels) system resulting in an increased risk of heart attacks, high blood pressure and stroke
- Damage to small blood vessels, which may lead to peripheral nerve damage (neuropathy) and ulcers on the feet and legs

- Damage to, or overgrowth of, blood vessels can affect the membrane at the back of the eye (retina), resulting in visual impairment or blindness
- Reduced blood flow to the penis, leading to **erectile dysfunction (ED)** and impotence
- Damage to the kidneys that may result in kidney failure

Diabetes is a progressive disease that is common in the older general population and is easy to diagnose. Early treatment involves altering your diet and there are a range of medications that help control your blood sugar level. More severe diabetes is usually treated with daily or more frequent injections of insulin.

Screening for diabetes should be done regularly in those with HIV as well as before and after starting ART.

“ Being diabetic, HIV positive and getting old is not easy!

All three conditions mean I juggle appointments and the news is not always good. I do feel as if I just get on top of one thing and then another goes haywire. What has kept me going is that I feel that I get holistic care in one place.”

Symptoms of type-2 diabetes

- Excessive thirst (polydipsia) and/or frequent and increased urination (polyuria)
- Increased fungal infections such as *Candida* (thrush) on the skin, especially in certain areas such as around the genitals and under the breasts
- Slow healing of wounds, including small cuts
- Blurred vision
- Tiredness, which can be significant
- Fluctuations in weight

Tests for type-2 diabetes

The simplest method of diagnosing diabetes is to test for glucose in a sample of your urine by using a slip of paper known as a dipstick or a machine that checks for abnormal levels of various constituents in the urine, including glucose. Abnormal urine tests should then be confirmed by blood tests, which measure the exact amount of glucose in the blood. The gold standard is to test the blood before and after a glucose drink and is known as a glucose tolerance test. In addition, once on treatment, whether using a diabetic diet or with medication, a further blood test (called an **HbA1c test** or glycosylated haemoglobin) should be performed at regular intervals; increasingly, the HbA1c test is also being used to diagnose diabetes. This test reveals if the glucose is properly controlled in between clinic visits and is important to assess the long-term exposure to increased glucose levels. These cause damage to a variety of body systems, including the heart, kidneys and eyes. Patients may also be asked to measure daily glucose levels in urine or

blood (by skin prick testing) to assess whether their medication is having the correct effect.

Development of any of the symptoms on the opposite page should be discussed with your HIV doctor as soon as possible. Once diabetes has been diagnosed, all body systems that might be affected should be examined on a regular basis to check for the possible damaging effects of this condition. For example, blood pressure, cholesterol levels and kidney function need to be reviewed regularly and annual eye tests performed to determine whether progression of the disease is causing specific damage. Excellent guidance is available at **www.diabetes.org.uk**.

As the population ageing with HIV grows, more and more individuals will develop diabetes and the knowledge of how best to treat the two conditions side by side will improve.



Lung Conditions: Chest Medicine

Increasing use of ART has led to an impressive reduction in serious or fatal lung infections associated with HIV.

Now, instead of opportunistic infections such as PCP, common lung diseases in HIV are more representative of those found in the general population. These include those that are considered age related, and

are often secondary to smoking. Smoking increases the risk and severity of numerous severe lung conditions, including pneumonia, emphysema and lung cancer by about twenty-fold.

Chronic obstructive airways disease (COPD)

Otherwise known as emphysema or chronic bronchitis, this is a common, disabling and irreversible disease causing breathlessness, chronic cough, often with phlegm production, and a predisposition to chest infections. It occurs mostly in people over 50, but occasionally at a young age. It is most common in smokers or ex-smokers, though only about one in five smokers are susceptible to cigarette smoke. Prolonged cannabis use can also lead to rapid and severe emphysema; this seems to be more frequent with the use of 'skunk'.

People living with HIV have higher rates of COPD. It is unclear if this is due to a direct effect of HIV in the lungs since there are several confounding factors (such as predisposition to chest infections and greater smoking rates) in HIV-infected individuals. These make it difficult to be

clear about the mechanism of developing COPD in HIV.

COPD is often progressive and although inhalers sometimes provide relief, reduction in lung function is only slowed down by stopping smoking. It's therefore never too late to stop! One way to diagnose COPD is with lung function testing, which is quick and easy to perform at GP surgeries or local hospitals.

If COPD is going to be treated by someone other than your HIV doctor, and you are taking antiretrovirals, it is always worth checking with the nurse or doctor if these drugs will interact with your antiretroviral medication. This is important as significant and avoidable interactions can occur – in particular, with some types of steroid inhalers.

Influenza

Influenza (flu) seems to cause more severe illness in people with HIV, especially in those with low CD4 counts, and is also more severe in older individuals. Whilst flu causes only few symptoms in some people, most of those who catch it have at least a sore throat, aching muscles and a cough or runny nose; it may also cause diarrhoea and vomiting. The illness tends to come on suddenly and symptoms usually start to improve by day 4 or 5, although it can take a week or longer for someone to feel completely better.

The flu vaccine provides more benefit (i.e. prevents more deaths and illness) in

people with HIV than in any other group. It should be given to anyone with HIV on ART, irrespective of age. As the vaccine is made from a weakened form of the flu virus, it's not recommended in people who are not taking ART. It has to be given yearly as the virus strains alter frequently and a previous year's vaccine may not cover the strain that is circulating. Side effects of the vaccine can include soreness around the injection site or muscle aches for a day or two. As influenza is a virus, antibiotics (which are only effective against bacteria) aren't useful, although the virus can predispose to bacterial pneumonia that would need treating with them.

Pneumonia

Streptococcus pneumoniae (otherwise called pneumococcus) is the bacterium responsible for most, but not all, cases of pneumonia. The risk of developing pneumonia from this bacterium is much higher in people with HIV, especially in those with low CD4 counts; it can also cause septicaemia (blood poisoning) and meningitis. Even on ART, the risk of pneumococcal infection is higher than in people without HIV and especially in

older individuals. Vaccination against pneumococcus should be given to everyone with HIV, irrespective of age. As the vaccine doesn't contain live bacteria, it can be given to anyone whether they are on ART or not, but it probably works better in people with a CD4 count of over 200. National guidelines suggest it's given once, although some doctors and the British HIV Association recommend a booster at 5 years.

Tuberculosis

Tuberculosis (TB) is caused by infection with *Mycobacterium tuberculosis*, a bacterium spread by coughing. It's completely curable in the vast majority of cases with prolonged courses of antibiotics. Individuals can be infected with TB bacteria, but not develop the illness for years, or ever; this is known as latent TB infection (LTBI). HIV infection increases the likelihood of developing TB disease, and the risk of becoming ill is much greater in those with very low CD4 counts. Individuals considered most likely to progress to active TB disease are those

who have recently been exposed to TB (from a family member, partner, colleague etc.) or who grew up in a country where TB is very common (e.g. countries in sub-Saharan Africa). It's important to watch out for any of the key symptoms such as sweating, weight loss, a cough that doesn't improve after 2–3 weeks or enlarged lymph glands in the neck. People living with HIV may be offered a TB skin or blood test. This is to look for existing TB infection (LTBI) and treatment of this with one or two anti-TB medications can prevent the disease in later life.

Lung cancer

Lung cancer is the biggest cancer killer in men and women in the UK and studies show a 2–3 times higher rate of lung cancer in people living with HIV that rises with age. Those who do develop lung cancer tend to be younger and the tumours more advanced when diagnosed than in the general population. As

smoking is strongly associated, it's unclear if this increased lung cancer risk is due to HIV itself or higher rates of smoking. Lung masses or shadows in people with HIV can be caused by conditions other than lung cancer and should be investigated promptly.

Kidney disease is becoming increasingly common in those ageing with HIV. It is vital to regularly check for it in order to prevent any further damage as deterioration in kidney function is irreversible.

Functions of the kidneys

The kidneys perform several vital roles including:

Filtering the blood: Your kidneys help you to retain the good chemicals in the blood, while excreting fluids that are unnecessary or toxic to the body. If less than 50% of the filtering units of the kidney cease functioning, then toxins and waste may be retained rather than excreted.

Regulating blood pressure: As the kidneys are one of the main organs that regulate blood pressure, abnormal kidney function may result in high blood pressure, which if prolonged can further harm the kidneys. High blood pressure is associated with ageing since blood vessels become less elastic. It is also associated with HIV infection, especially if the viral load is high, the person is African and/or has diabetes.

Vitamin D is made in the skin and is converted into its active form in the kidneys. As individuals age the amount of vitamin D produced declines and the conversion to the active form is less efficient. Vitamin D plays a vital role in maintaining healthy bones.

Monitoring the oxygen levels in the blood and stimulating the bone marrow to produce more red blood cells (oxygen-carrying cells) to maintain appropriate levels.

Kidneys and Waterworks: Nephrology & Urology

Multiple factors can cause damage to your kidneys. The most common are drugs (prescribed and illegal), ageing, diabetes and high blood pressure.

Excessive or prolonged use of some pain-killers and some antiretroviral medications can cause a serious reduction in kidney function (sometimes called renal function). HIV is a risk factor

for kidney disease, especially if you have a high viral load, or you are of black African descent. Most people have two kidneys but those with only one usually manage to remain quite well.

Symptoms of impaired kidney function

- Increased or decreased passing of urine. Due to the large amount of reserve function in the kidneys, it may take a 50% loss of function before a change is seen through abnormal blood or urine tests
- Nausea and/or vomiting
- Itchy skin
- Muscle cramps
- Decreased appetite
- Difficulty in concentrating

If you develop any of these symptoms tell your HIV doctor immediately

How is kidney malfunction detected?

You should have regular blood checks every 3–6 months to assess your kidney function. These tests look at two chemicals in the blood, **urea and creatinine**, as high levels may indicate kidney damage. From these tests an estimated measure of blood flow through the kidney can be calculated. Called the eGFR (estimated glomerular filtration rate), this reflects kidney function.

A quick and easy test of potential kidney damage is a urine dipstick test, which can detect abnormal levels of protein, blood, bilirubin (a waste product of the liver), white blood cells, glucose and ketones

(an indicator of diabetes). This screening test is a simple indicator of which further tests need to be carried out to establish the cause of any abnormality found and should be performed at every clinic visit along with measurement of your blood pressure. Other specialist tests, including an ultrasound scan of your kidneys, may be performed and referral to a nephrologist (kidney doctor) made.

Anyone with HIV and serious or chronic kidney disease should be seen jointly with a nephrologist.



Risk factors for developing kidney disease include:

- **High blood pressure**, which can occur with HIV infection or be associated with ageing. HIV infection can also directly cause kidney disease; this is called HIV-associated nephropathy (HIVAN) and commonly affects black African patients
- **Some antiretrovirals** can cause renal disease of various types, including the development of kidney stones; this is limited to only a few drugs although interactions with other medications can exacerbate the problem.
- **Diabetes** can lead to kidney disease, especially if glucose levels in the blood are persistently too high. This may result in diabetic nephropathy (kidney disease due to diabetes) and is usually also associated with high blood pressure
- **Ageing** commonly leads to reduced blood supply to the kidney and a slow decline in function
- **Recreational drug use** can damage the kidneys (especially cocaine and amphetamines)
- **Excessive use of pain killers**, especially certain anti-inflammatory medications
- **Severe bacterial or other infections**, especially urinary infections

“ Since I came to the White House, I got two hearing aids, a colon operation, skin cancer, a prostate operation and I was shot. The damn thing is I’ve never felt better in my life.”

Ronald Reagan (1911—2004), US president

The Prostate

Enlargement of the prostate gland is rare before the age of 40 but there is nearly always a degree of enlargement by the age of 50, and it increases thereafter with age.

Minor prostate enlargement is considered a natural part of the ageing process and is known as benign prostatic hyperplasia (BPH). This condition is not cancerous and is not associated with HIV infection but significant enlargement may well result in troublesome symptoms requiring medication or surgery. The urethra, which passes through the prostate, is constricted by the enlarging gland and resulting symptoms include:

- Delay in starting to urinate (hesitation)
- An increased need to urinate more frequently both day and night (frequency)
- A weak and sometimes intermittent stream of urine (poor stream)
- Post-urination dribbling
- A sensation that the bladder has not emptied completely (retention)

These symptoms may not occur at the same time, may vary between individuals and can be worsened by drinking large

volumes of fluids, especially of alcohol, and cold weather. Drugs that cause increased urination such as some blood pressure medication, or those that result in decreased urination allowing urine to stagnate in the bladder and increase the risk of urinary tract infections or stones in the bladder, may exacerbate the symptoms.

It is possible for a complete blockage of the flow of urine to occur, which is very uncomfortable and requires emergency treatment. This, however, is uncommon.

Prostate cancer may have similar symptoms and your doctor should screen for the disease by a specific blood test called a PSA (prostate specific antigen) and by performing a digital rectal examination to feel for lumps; if necessary you will be referred for further tests. If you are concerned about your symptoms you should discuss these early on with your doctor. Routine screening of the PSA alone is no longer recommended as it is possible to develop prostate cancer with a normal PSA, so examination of the prostate is essential.

Getting older, being a woman, HIV infection itself and some antiretrovirals are all risk factors for developing osteoporosis

Weight-bearing exercise and diet and lifestyle changes are vital to prevent and treat osteoporosis; drug therapy may be required

Bones and Joints: Rheumatology

Ageing and HIV infection can weaken bones, making them more brittle and more likely to break (fracture).

Osteoporosis (literally bones with holes) is a condition where the bones become brittle, and since they are less flexible become more susceptible to fracturing. Osteopenia is the term used to describe the thinning of bones

before osteoporosis develops. A further condition, osteonecrosis, also known as avascular necrosis, is when bone dies, often due to poor blood supply to damaged bone. This usually occurs at the top of the thigh bone, near the hip joint.

Causes of osteoporosis

The strength of bones depends on their bulk (mass) and thickness (density). Bone density, in turn, partially depends on the amount of calcium, phosphate and other minerals that bones contain. When bones contain low levels of minerals their strength and density is decreased; untreated osteopenia usually leads to osteoporosis.

HIV infection may increase the risk of developing osteoporosis as do certain drugs, including some antiretrovirals and large doses or long-term use of corticosteroids.

What are the symptoms and complications?

- In the early stages of osteoporosis, there may be no symptoms

- Pain is the commonest symptom in places where the bones are more vulnerable to pressure such as the back and the hip
- Pain in the hip area, which may be severe, is the commonest symptom of osteonecrosis
- Fractures or disintegration of some of the bone in the vertebrae (the bones making up the spine) may result in loss of height over time and back pain
- Falls are more common as people get older, often leading to fractures in weakened bones
- Hip and wrist bones are the most commonly fractured bones in older individuals

How is bone damage detected?

Osteopenia and osteoporosis are diagnosed by measuring bone density in various sites of the body, usually at the hip and the spine. The bone density test is called a DEXA (dual energy X-ray

absorptiometry) scan and indicates loss of mineral in the bones. The bone mineral density of the patient is compared with the peak density of a healthy 30-year-old of the same gender

“Dem bones, dem bones, dem dry bones.”

Traditional spiritual song with lyrics based on Ezekiel 37:1–14

Risk factors for developing osteoporosis include:

Ageing: the risk increases with age. The rate and severity of developing osteoporosis depends on how much bone mass was built up between the ages of 25 and 35, known as peak bone mass, and how quickly this is lost. The higher the peak bone mass, the longer it will take to develop osteoporosis with normal ageing.

HIV infection: the virus itself can be associated with both osteoporosis and osteonecrosis. The reason for this is unclear; however, the longer a person is infected with HIV, the greater the risk of both conditions.

Ethnicity: people of Asian and Caucasian origin are more at risk than other ethnic groups.

Lifestyle: excess alcohol and caffeine consumption, tobacco smoking and lack of exercise all predispose to osteopenia and osteoporosis.

Diet: a lack of calcium and vitamins (especially vitamin D) in the diet increases risk.

Body mass index (BMI): low BMI usually means a person is underweight and therefore there is no in built weight training with daily body movements.

Hormone levels: The onset of the menopause results in a decrease in hormone levels for all women. The protective effect of the hormone oestrogen on the bone is lost at this stage in a woman's life. Women with HIV may go through the menopause a few years earlier than the average woman, thus further increasing their risk of bone thinning. Men with low testosterone levels, which is common in HIV infection, are also at increased risk of bone loss.

Medications: some antiretroviral drugs as well as corticosteroids, may result in decreased bone density.

Other conditions: diabetes, liver disease, kidney disease or a family history of osteoporosis increase the risk of it developing.

and ethnicity. This measure called the T-score is used to calculate how far it is below the peak score in the area of bone being tested. How frequently DEXA scans should be performed in those with HIV is, as yet, unclear although guidance from the HIV un-infected ageing population studies suggests it should be based on the severity of osteoporosis when first measured.

The T-score is the relevant measure to screen for osteoporosis in post-menopausal women and men over the age of 50 because it best predicts the risk for future fractures. The criteria of the World Health Organization (WHO) are:

- **Normal is a T-score of -1.0 or higher**
- **Osteopenia is defined as between -1.0 and -2.5**
- **Osteoporosis is defined as -2.5 or lower**

An X-ray or **MRI scan** can be used to diagnose osteonecrosis but sometimes it is necessary to also perform a bone biopsy (a small sample of bone is removed for analysis either under local or general anaesthetic) to ascertain the cause.

Prevention and treatment options for osteoporosis

The best way to avoid these conditions is to build up strength in the bones before the peak bone density at age 35. However, in later life, if either osteopenia or osteoporosis has already begun to develop it is possible to prevent further deterioration and reduce the risk of fractures by:

- **Exercise:** weight-bearing exercise can help to retain minerals within bone as well as strengthening the muscles and other supports for your body structure. Activities such as weight-lifting, hiking, swimming, running and other types of exercise may improve bone density and lower the risk for developing problems.
- **Lifestyle changes:** apart from exercise, it is vital to reduce other risk factors such as smoking and excessive alcohol consumption. A good diet

and supplements containing calcium, phosphate and vitamin D will help to improve bone strength.

- **Medication:** your doctor may firstly advise taking calcium or vitamin D supplements, but if the fracture risk looks to be significantly increased, drugs called bisphosphonates may be prescribed.
- **Steroids:** of any type should be avoided if possible but especially corticosteroids.
- **Surgery:** may be required for fractures, especially if a joint is involved. Hip and spine fractures are the ones most commonly seen.



Vitamin D

Vitamin D is essential for good health. It helps the absorption of calcium, is necessary for healthy teeth, bones and muscles and is thought to play a role in the prevention of some cancers, diabetes, and heart disease, as well as in the regulation of the immune system. Vitamin D deficiency has been associated with low CD4 cell counts and HIV disease progression. A lack of vitamin D may also increase the rate of **fibrosis** of the liver in hepatitis C infection.

The main source of vitamin D is production within the skin with the help of sunlight. This process requires exposed skin as well as direct sunlight (not through a window). Darker skin needs more sun exposure to make the same amount of vitamin D as lighter skin and skin colour is the major factor in vitamin D deficiency in Europe. Vitamin D is also found in certain foods.

Causes of vitamin D deficiency include:

- Ageing
- HIV infection

- Some ART
- Low exposure to sunlight and/or darker skin
- Poor or low-fat containing diets

Research has shown that almost a third of HIV-positive patients are vitamin D deficient. Vitamin D is processed in the body in a similar way to many HIV medications and certain antiretrovirals are implicated in this deficiency.

Symptoms are non-specific and include tiredness and aches, muscle weakness, cramps or pain and bone pain most often in the back, hips and/or legs.

Vitamin D levels in the blood should be measured on a regular basis and blood tests taken to assess calcium and phosphate levels.

Treatment is with vitamin D supplements. On-going research will hopefully shed further light on the causes and consequences of this deficiency in HIV-infected individuals.

Joint disease

Joint problems increase with ageing due to a combination of wear and tear and genetic pre-disposition.

Rheumatologic conditions commonly cause pain swelling and stiffness of the joints and it is important to diagnose any underlying medical problems such as rheumatoid arthritis before treating these symptoms.

In HIV infection joint problems are commonly related to inflammation and

infection, and any signs or symptoms of joint problems should be discussed with your HIV doctor or GP and thoroughly investigated.

Treatment is essentially similar for HIV and age-related joint disease, although it is vital that possible drug interactions with your antiretrovirals are considered when treatments, such as steroids, are used.

Blood Disorders and Cancers: Haematology & Oncology

Anaemia is common both in older people and those with HIV infection. Various cancers are linked to HIV infection. As people are now ageing with HIV infection, they are more at risk of developing many cancers and at an earlier age.

Blood disorders

Anaemia, a decrease in the ability of red blood cells to carry oxygen around the body, is the commonest blood disorder seen in older people and those with HIV infection. Three-quarters of people with anaemia have the type associated with long-term (chronic) illnesses, which is not regarded as being serious or life threatening. Nonetheless, if the **haemoglobin** level, a measure of the severity of the anaemia, goes below a certain value, or symptoms such as tiredness or shortness of breath become troublesome, a blood transfusion or other treatments may be given. A lack of iron, vitamin B₁₂ or folic acid is also a common cause of anaemia in the elderly, which may be treated with tablets or injections, depending on the type of anaemia.

In people with HIV infection, anaemia may also be associated with medication, such as co-trimoxazole (Septrin) used for treating or preventing PCP. Depending on the cause and the severity of the

anaemia and options for alternative treatment, a watch and wait policy may be adopted. Blood abnormalities such as anaemia and certain cancers of the lymphatic system are more common in people with HIV infection as well as being commoner with increasing age.

Sometimes, the first indication of a new condition is an abnormal blood test result. Tiredness may be the only symptom but it should always be investigated, even though it can be caused by many things. Enlarged lymph glands, sometimes called lymph nodes (swellings in various parts of the body such as in the neck, under the jaw, in the groin or armpits) may be the first obvious sign of some lymph cancers and these should always be reported to your HIV doctor.

As the immune system may be more fragile in someone who has HIV infection, the management of certain disorders is likely to be somewhat different to that for an uninfected

individual.

Cancers

The overall risk of developing cancer, of any type, increases with age, especially after sixty. Cancer is a broad term that encompasses over 200 different diseases, banded together because they are all caused by abnormal cells that multiply in an uncontrolled manner. Cancer cells start to go out of control due to mutations in their DNA as a result of both genetic inheritance and through exposure to environmental **carcinogens**, for example through smoking. As people age their cells are exposed to more carcinogens and their DNA is at increased risk of mutating, meaning that the rate of cancer formation

fundamental role in protecting the body from cancer cells by killing cells that contain mutated DNA. However, with age the immune system becomes weaker and more cancer cells can slip through its surveillance. HIV attacks the immune system, making it less able to monitor and kill cancerous cells and, consequently, the risk of developing cancer increases.

In the past, people with HIV infection and a very damaged immune system typically got three types of cancer: Kaposi's sarcoma, non-Hodgkin's lymphoma and invasive cervical cancer in women. These are referred to as AIDS-related cancers and are

AIDS-related cancers

- **Kaposi's sarcoma (KS):** is caused by a virus from the herpes family (HHV8) and presents as painless, reddish-purple patches that can occur anywhere on or in the body, but classically are seen on the skin.
- **Non-Hodgkin's lymphoma (NHL):** usually starts in the lymph glands, which are the part of the immune system that help fight disease. Lymph glands are found in the neck, armpits, in the groin and inside the abdomen. Patients with NHL often experience fevers, weight loss and night sweats. Another herpes virus, Epstein-Barr virus (EBV), is the underlying cause of this cancer.
- **Invasive cervical cancer:** affects the cervix, the entrance from the vagina to the uterus. Almost all cervical cancer is caused by the human papilloma virus (HPV), the wart virus. Cervical cancer develops faster in women with HIV infection and, therefore, it is vital for women with HIV infection to have regular cervical smears to screen for pre-cancerous changes and cervical cancer itself.

As people with HIV are living longer, they are developing a widening range of cancers that are related partly to ageing but may also be associated with immune damage due to HIV infection. This is occurring even when people take ART and have healthier immune systems. These cancers affect many different parts of the body and are known as non-AIDS-defining cancers.

Non-AIDS-defining cancers

- **Lung cancer:** smoking is the main risk factor and symptoms include persistent cough, weight loss and coughing up blood. Quitting smoking, exercising and keeping the immune system strong greatly lowers the risk of developing lung cancer.
- **Hodgkin's lymphoma:** is another cancer that occurs mainly in the lymph glands. It can cause night sweats, weight loss and swollen glands.
- **Anal cancer:** men who have sex with men have a high risk of developing anal cancer. Although anal sex does not directly cause anal cancer, it can lead to being infected with the wart virus (HPV), which greatly increases the risk of developing anal cancer. In HIV it seems to be much commoner in both men and women.
- **Liver cancer:** the risk of liver cancer (hepatocellular carcinoma) is very high in people with HIV who are also infected with hepatitis B and hepatitis C.
- **Kidney and skin cancers,** as well as **leukaemia** and **head and neck cancers,** are twice as common in those with HIV infection.

There are a variety of factors that increase the risk of developing cancer in HIV:

- Infection with other viruses. Being infected with HIV results in a weakened immune system. This makes it easier for other viruses to cause damage in the body, which results in genetic mutations that lead to the development of cancers.
- Cancer-causing viruses include hepatitis B and C, and some types of herpes virus, such as EBV (which typically causes glandular fever) and HPV (various strains of the wart virus).
- Smoking is a major risk factor not only for lung cancer but also for other cancers. Not smoking or stopping smoking greatly reduces the risk of developing many cancers.
- If there is a family history of any form of cancer, it is important to look out for symptoms and report anything unusual to your HIV doctor as well as providing your family history.

In the UK, there are a number of screening programmes for cancer, such as the cervical cytology screening programme, and it is vital that you are enrolled in these either at your HIV clinic or GP surgery. Information about screening will be provided at routine and annual clinic visits.

This guide does not include information on treatment for cancer, neither for ones that are HIV-related nor those more commonly seen with ageing, since the treatment of cancer is extremely specialised and changes in treatment occur regularly. It is vital that if cancer is suspected it is investigated immediately and if diagnosed, referral is made straight away to specialist cancer teams for treatment, management and follow-up.

DO NOT DELAY AS TIME IS OF THE ESSENCE IN DIAGNOSING AND TREATING CANCER.

Risk factors for developing liver disease include:

Medications known to be toxic to the liver: such as several commonly used to treat tuberculosis. The extent of damage varies and if these drugs are prescribed, monitoring of liver function is vital and drug or dose changes may be required.

Non-prescription drugs: also known as over-the-counter (OTC) drugs, can also have side effects that affect the liver. Your pharmacist should explain these to you when you buy the medication and you should always tell them all the medications you are taking.

ART itself may be toxic to the liver: However, those who delay starting or who interrupt HIV treatment are also likely to develop liver disease. So, it is important to monitor the blood regularly for potential antiretroviral-induced liver damage.

Hepatitis B and C: and also other rarer hepatitis infections cause liver disease. Acute hepatitis can occasionally lead to serious illness and death, therefore, vaccination against hepatitis A and B is vital for people with HIV infection unless they are already immune.

Obesity: results in large amounts of fat being deposited in the liver, which can cause abnormal liver function and liver damage.

Excessive alcohol intake and some recreational drugs: cause liver damage and can also impair the processing of medications, including antiretrovirals, potentially increasing the side effects of ART.

Some vitamins and supplements: in high doses lead to liver damage. Taking herbal medicines can result in liver function abnormalities but do not always cause damage, although they can alter the processing of other drugs such as prescription medications and ART.

AIDS-related opportunistic infections (OIs): such as tuberculosis and CMV (cytomegalovirus) infection can cause damage to the liver.

Low CD4 cell counts: can predispose to liver disease.

Sharing equipment for tattoos and drug use: may result in infection with hepatitis B and/or hepatitis C, which may lead to liver disease over time.

Liver and Hepatitis Co-infection: Hepatology

Liver disease is common in HIV infection, mainly due to co-infection with hepatitis B and/or C. Other causes are excessive use of alcohol and recreational drugs and long-term exposure to some antiretrovirals and other drugs used to treat associated infections. It is also thought that HIV infection itself may damage the liver.

The liver is an organ that produces chemicals that help in the digestion of food. The liver filters blood from the gut to remove toxic or harmful substances and processes the digested elements of food, to be stored as energy, vitamins and minerals. The liver also processes many medications and non-prescription drugs. Proteins, such as antibodies for the immune system and clotting factors for the blood, are also produced in the liver and any of these functions may be impaired by liver damage.

Such damage to the liver may be caused by infections such as hepatitis B and C in particular, heavy alcohol and recreational drug use and some prescription medication, including ART.

The liver is a large organ and is unique in that it can repair itself. Some amount of damage to the liver is reversible. However, as people age the process of repair slows down and continuing insults to the liver will affect its ability to renew itself.

Ageing affects the various functions of the liver in different ways. It increases the rate at which liver cells (hepatocytes) take up substances, but decreases the processing function of the cells, both of which may be slowly damaging to the liver and to the rest of the body. However, the ability of the liver to excrete substances, including drugs, does not change with age. There is a paucity of research into the ageing processes within the liver and findings vary, but low CD4 counts with HIV and ageing may all contribute to the risk of developing liver disease.

Liver disease may progress slowly, but in those co-infected with HIV and Hepatitis B and/or C, the rate of disease progression can be faster. Over time the liver may become scarred, a process known as fibrosis, which may lead to severe damage, called **cirrhosis**. This is a risk factor for the development of cancer of the liver (hepatocellular carcinoma).

Tests to detect liver disease

Liver **enzymes** are chemicals produced by the liver under normal circumstances. The levels of these substances – alanine aminotransferase (ALT), aspartate transaminase (AST), bilirubin (BR), alkaline phosphatase (Alk Phos) and also gamma glutamyl transferase (gamma GT) – may be raised altogether or in particular patterns related to different types of liver disease. Ultrasound or CT or MRI scans and biopsy may be performed to confirm the cause of the liver disease and to determine the extent of the liver damage.

A specific type of scan, the FibroScan®, can measure fibrosis or stiffness of the liver and is usually done before, and sometimes instead of, a biopsy.

The presence of antibodies (bodily defences) against hepatitis A, B and C should be checked by blood test and depending on the result, vaccination against hepatitis A and B may be recommended.

Symptoms of liver disease

- Persistent nausea and/or vomiting
- Persistently dark urine
- Light coloured stools
- Yellow tinge to the skin and whites of the eyes known as jaundice, which may be very subtle
- Severe tiredness that cannot be otherwise explained
- Rapid abdominal swelling or weight gain

Hepatitis A (HAV)

If antibodies are not present then vaccination to prevent future infection is important.

Hepatitis B (HBV)

If antibodies are not present and there is no immunity to hepatitis B, further tests are performed to establish the presence of active infection. This is indicated by surface antigen (HBsAg) and e-antigen (HBeAg), as well as the level of active hepatitis B virus (HBVDNA). Treatment for active hepatitis B is very effective but regular ultrasound screening is required to check for the development of liver cancer. If testing against another antibody, hepatitis B surface antibody (HBsAb) is negative, vaccination against hepatitis B should be given.

Hepatitis C (HCV)

If antibodies are present, a hepatitis C viral load test is performed, and if positive, confirms a diagnosis of active hepatitis C infection. Your doctor can discuss the other tests that are needed as well as the options for treatment, which are rapidly improving. There is currently no vaccine for HCV.

“ The intuitive mind is a sacred gift, and the rational mind its faithful servant. We have created a society that honours the servant and has forgotten the gift.”

Albert Einstein (1879—1955), German theoretical physicist

“ Inside every old person is a young person wondering what happened.”

Sir Terry Pratchett (b. 1948), English author

All symptoms, no matter how trivial, should be reported to a health professional as diseases of the nerves and brain are common in HIV infection

Nerves and Brain: Neurology

Both ageing and HIV infection can result in deterioration of nerves, the muscles they supply and the spinal cord and brain tissue. Starting ART earlier and choosing specific combinations of drugs can help to prevent or decrease the extent of possible damage to the brain, potentially avoiding progressive diseases such as dementia.

The loss of functioning cells in the brain due to ageing leads to reduced ability to memorise or to learn new skills (cognitive function). In addition, the complex network of nerves supplying the rest of the body becomes less efficient, with, among other changes, decreased reaction times. There is significant individual variation in the rate that these changes occur with age and they appear to be exaggerated by both HIV and HCV infection.

Symptoms of early neurological illness may be subtle and therefore easy to miss or ignore. They include dizziness; weakness or loss of strength; persistent or severe headache; and pins and needles and numbness, either in the hands and feet or elsewhere. These symptoms should always be reported to your HIV doctor.

Peripheral neuropathy

This is a condition of the long nerves that causes tingling, pins and needles, numbness and pain in the feet and/or the hands and which may spread up the arms and down the legs. It is much more frequent as people get older. It may be due directly to the effects of HIV infection, some ART, other medications, vitamin deficiencies, diabetes and excessive alcohol intake.

Peripheral neuropathy can be sometimes suspected via blood tests, but then it requires more specialist tests such as nerve conduction studies (NCS) for an accurate diagnosis. Symptoms may be improved by removing or reducing the cause, such as excessive alcohol, and specific medication may also help to improve the condition or treat the symptoms.



The senses

The five senses (taste, touch, hearing, sight and smell) may also be affected by ageing, most commonly hearing and sight. Taste and smell are usually well maintained, but can be altered by

some medication. It is very important to differentiate between what is pure ageing and what might be a complication of HIV infection, ART or other medication.

Hand function

This decreases with age in both men and women, especially after the age of 65, and is a result of a combination of structural changes (in joints, muscles, tendons, bones, nerves, blood supply, skin and fingernails) and also grip and pinch strength, all of which affect hand dexterity. These age-related

changes are often accompanied and complicated by other conditions that are more common with age and HIV infection, such as osteoarthritis and rheumatoid arthritis. Hand function can be assessed by occupational therapists and physiotherapists and aids provided to improve it.

Stroke

Stroke (cerebrovascular accident - CVA), due either to clots in blood vessels in the brain or bleeding from these vessels, may cause paralysis of one side of the body and may also affect speech, depending on where the clot or bleed occurs. Improvement in or even recovery of lost function is possible with the aid of prompt drug therapy in a stroke unit followed by physical and occupational therapy. Lifestyle changes such as stopping smoking may reduce the risk of stroke.

Stroke is a medical emergency and it is vitally important to act quickly to help someone to reach hospital quickly and receive early treatment.

Remembering **Face, Arm, Speech, Time (F.A.S.T.)** can help you recognise the symptoms of a stroke. For more information, see **www.nhs.uk/actfast**.

**Suspect a stroke?
Act FAST and call 999!**

F **ACIAL** weakness

A **RM** weakness

S **PEECH** problems

T **IME** to call 999

“What is human memory?” Manning asked. “It certainly is not a passive recording mechanism, like a digital disc or a tape. It is more like a story-telling machine. Sensory information is broken down into shards of perception, which are broken down again to be stored as memory fragments. And at night, as the body rests, these fragments are brought out from storage, reassembled and replayed. Each run-through etches them deeper into the brain’s neural structure. And each time a memory is rehearsed or recalled it is elaborated. We may add a little, lose a little, tinker with the logic, fill in sections that have faded, perhaps even conflate disparate events.”

Arthur C. Clarke (1917–2008), English science fiction author

HIV-associated neurocognitive impairment (HAND)

Asymptomatic neurocognitive impairment (ANI): brain changes are present but, as implied, there are no symptoms. It is diagnosed when individuals score low on neuropsychological testing but there are no symptoms evident to the individuals or to others.

Mild cognitive impairment (MCI): symptoms may range from a noticeable change in concentration span and deterioration in short-term memory, to problems with carrying out activities of daily living (ADLs).

HIV-associated dementia (HAD): previously known as AIDS dementia complex (ADC). HAD is characterised by significant difficulties with memory, such as taking medications properly or preparing meals; the ability to perform complex tasks such as tying shoe laces is specifically affected. Changes in mood, behaviour and personality may occur as well. It is unclear whether MCI always leads to dementia since those diagnosed with MCI may remain stable for many years.

Neurocognitive impairment and dementia

Since the advent of ART, the prevalence of HIV dementia has declined. However, recent research has shown that HIV-related neurocognitive impairment is rising as people live longer with HIV infection.

It may involve reduced cognition (thinking), motor control (loss of muscle control and slowing of reflexes) and psychological (mood) changes.

HIV-associated neurocognitive disorder (HAND) is thought to be due to a change in the brain's chemical environment triggered by HIV infection.

Similar changes also occur with ageing, but seem to develop earlier with HIV infection. Changes may be mild and may not be noticed by the person affected. Severe symptoms may ensue and become more disabling as dementia encroaches.

The lowest ever CD4 count (known as the nadir) is a risk factor for

significant neurological decline even if undetectable viral load and good CD4 levels are subsequently achieved with ART. This implies that HIV-associated brain disease is related to duration and severity of infection and underpins the argument for starting ART earlier. Some drugs used to treat HIV may offer more protection against neurocognitive decline than others by reducing the activity of the virus in the brain more effectively. It is important to establish the cause, if possible, and extent especially, of changes in neurocognitive function by specialised testing prior to choosing or changing medication. Such neuropsychological testing is becoming part of standard care in many HIV clinics.

Symptoms of neurocognitive impairment

- Decreased concentration span
- Deterioration in short-term memory
- Difficulty learning new skills
- Difficulty with co-ordination, mobility and slower reflexes
- Changes in mood and development of depression

“ Seek ye counsel of the aged for their eyes have looked on the faces of the years and their ears have hardened to the voices of Life. Even if their counsel is displeasing to you, pay heed to them.”

Kalil Gibran (1883—1931), Lebanese-American author

“ And it came to pass, that Isaac was old, and his eyes were dim...”

Genesis, Chapter 27, Verse 1

Eyes and Eyesight: Ophthalmology

Although ageing affects almost everyone's eyesight, advances in medical technology mean that treatment is available to preserve or restore good vision in most individuals.

One of the commonest reasons for eyesight to deteriorate is ageing of the lens. In normal young and adult life the lens is crystal clear and flexible but ageing causes the lens to become cloudy, forming a cataract, which results in reduced vision. Cataracts can easily be removed surgically and replaced by artificial lenses.

Over time the lens becomes less flexible and the eye loses its ability to focus over a wide range of distances. The loss of near vision with age is known as presbyopia and is treated with glasses.

Once the immune system has been restored with ART there are no specific ocular conditions that appear to be associated with HIV itself. However, diabetes and high blood pressure, both more common with HIV infection and ageing, affect the retina (membrane at the back of the eye) causing visual deterioration and may even lead to blindness. Yellowing of sclera (the white part of the eye) and/or skin can be caused by certain HIV drugs and also by some liver diseases such as hepatitis B

and hepatitis C infection. Your HIV doctor may suggest you alter your ART if this occurs.

There are many other conditions that affect the eye with age but there is as yet no evidence to say that HIV directly changes any of these. The tear ducts and the outer membrane of the eye, called the cornea, are both subject to the wear and tear of ageing. Other important conditions affecting the ageing eye are glaucoma, when there is increased pressure in the eye, and damage to the membrane at the back of the eye, the retina, which may detach and require surgical repair. Any sudden change in vision or loss of vision should be reported to an Accident and Emergency department immediately, preferably at a specialised eye hospital.

Regular eye checks are vital over the age of 40. Visits to the optician should be made every 1–2 years and more regularly if there is a history or family history of diabetes, high blood pressure or glaucoma.

“ To resist the frigidity of old age, one must combine the body, the mind, and the heart. And to keep these in parallel vigour one must exercise, study, and love.”

Charle-Victor De Bonstetten (1745—1832), Swiss liberal writer

“ It’s sad to grow old, but nice to ripen.”

Brigitte Bardot (b. 1934), French actress

Sexual Life and Hormones: Endocrinology

The andropause and the menopause cause significant symptoms in some men and women. It is important to distinguish which of these are due to HIV infection and which from changes in hormone levels caused by ageing.

Andropause

This is the term used to describe the symptoms associated with a low testosterone level, which begins to diminish in all men over the age of 30 at an estimated rate of 10% every decade as part of the ageing process. In the HIV-negative population testing would normally begin at 50. However, in HIV infection testosterone deficiency seems to begin at an earlier age and is commoner in those with a low CD4 count and those who have taken androgenic steroids (testosterone supplements).

Decreased production of testosterone is matched by an increase in another hormone, called sex hormone binding globulin (SHBG). This binds to some of the available testosterone circulating in the blood, leaving even less testosterone available for use by the body, which may cause various physical and mental changes that are part of the andropause.

Symptoms of the andropause include:

- Low sex drive
- Decreased early morning erections
- Difficulty getting erections or getting ones that are not as strong as usual
- Lack of energy or fatigue
- Loss of strength or muscle mass
- Increased body fat
- Hot flushes and sweats
- Irritability and mood swings
- Depression

Some of these symptoms may occur also with HIV infection or be side effects of ART or other medication. The onset of any particular symptom may be gradual, symptoms may not occur together and may vary between individuals but they should all be reported to your doctor. Low testosterone levels put men at a higher risk for developing osteoporosis. Further research is required, but studies have shown that low testosterone probably also increases the risk for cardiovascular disease (CVD). Other studies have suggested that older men with low testosterone levels are also at higher risk of cognitive impairment.

Symptoms of the menopause

Insomnia (difficulty sleeping): and night sweats, which can also occur with HIV infection. Sleep disturbance can contribute to fatigue, low mood and concentration problems.

Hot flushes: (a sensation of heat usually involving the face and upper body, sometimes associated with a fast heart rate that lasts a few minutes) are common in women during the menopause.

Skin and hair changes: result from reduced hormone levels; skin becomes drier and hair thinner and more brittle. These changes continue beyond the menopause but may also occur in HIV infection, associated illnesses and with some medications.

Fatigue: (feeling tired all the time with low energy levels unrelieved by rest) may be a symptom of the menopause, HIV infection and/or ART or other medication.

Increased urinary tract infections: can result from lowered hormone levels leading to thinning of the membranes lining the urethra (the tube from the bladder to the outside through which urine flows). This is unlikely to be due to HIV infection, but may indicate a sexually transmitted infection or kidney disease and should be investigated.

Bone thinning or osteoporosis: occurs more rapidly in women after the menopause due to reduced oestrogen levels. HIV infection and some antiretroviral medications lead to thinning of the bones and an increased risk of fractures.

Blood tests for testosterone and other sex hormones can determine how severe the problem is and can help reveal the underlying cause. These tests are best taken in the early morning, when testosterone levels are highest.

Other causes for low testosterone should be investigated since treating the deficiency is beneficial in providing relief from the symptoms of andropause, especially in helping to prevent

osteoporosis and improve sexual interest. Lifestyle changes that include regular exercise, less alcohol and recreational drug use, reduction in stress and good diet are also recommended.

Testosterone replacement comes in different forms, including gel, patches and injections. Each method has advantages, disadvantages and side effects, which should be considered when choosing replacement therapy with your doctor.

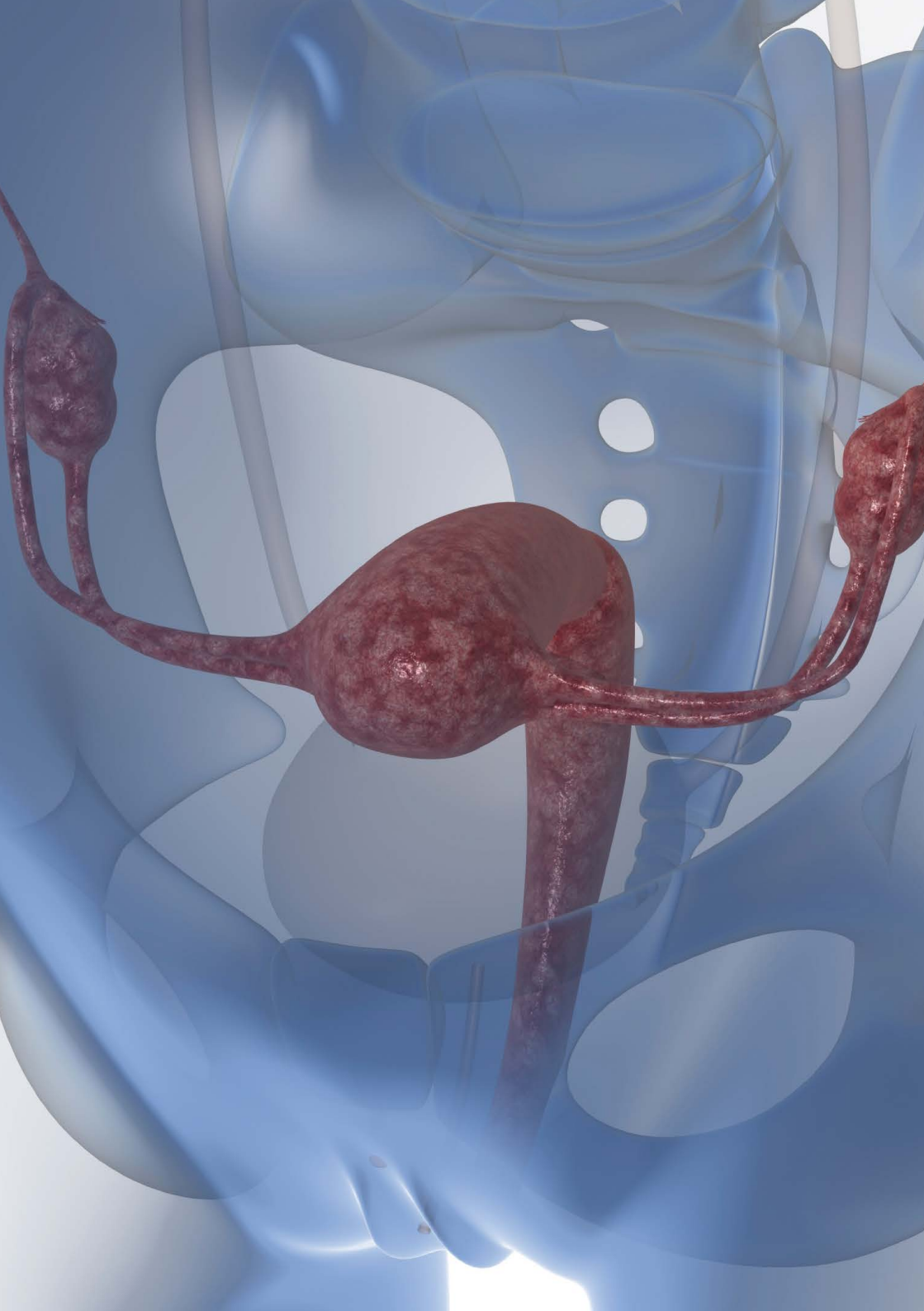
Menopause

Menopause is the stage at which the ovaries stop producing the female sex hormone oestrogen, menstruation (having periods) ceases and bearing children is therefore no longer possible by natural means. It is a gradual process that occurs on average between the ages of 45 and 55. Women with HIV infection may experience irregularities in their cycles, and may be slightly more at risk of an early menopause (under 45 years). It is important to discuss with your doctor any changes in your periods or other symptoms that you are concerned about.

There is a wide individual variation in the nature and severity of symptoms that women experience during menopause. Many symptoms will be temporary and may be helped by simple lifestyle measures: taking regular weight-bearing exercise, eating a balanced diet of regular small meals, maintaining a normal BMI and reducing alcohol and caffeine intake may all help reduce the severity of hot

flushes and sweats, and protect against thinning of the bones. If symptoms are particularly debilitating, women may choose to take hormone replacement therapy or other medications.

Hormone replacement therapy (HRT) is particularly effective in reducing hot flushes and night sweats, with subsequent improvements in sleep patterns, mood, energy levels and concentration. There has been much controversy about HRT in the past, but it is now thought to be safe for most women and can be used to help menopausal symptoms certainly until age 50, and if necessary until age 60. In addition, HRT will help prevent further thinning of the bones, and is now thought to offer some protection against heart disease if it is started at the time of the menopause. This might be especially beneficial to women with HIV, but there have been very few specific studies that look at the long-term benefits of HRT for HIV-positive women.



HRT can be prescribed in the form of tablets, patches, gels or implants. For HIV-positive women who take some ART, there may be drug interactions, which means that slightly higher doses of hormones are required to get adequate symptom relief. Vaginal and urinary symptoms may be better helped by local vaginal oestrogen creams or pessaries rather than systemic treatments.

Before starting HRT, women should be counselled about the risks and benefits of treatment for them as an individual, especially if there is a personal or family history of breast cancer or blood clotting disorders. Many GPs can provide this advice, but referral to a specialist menopause clinic or women's health service may be necessary.

Women who continue to be sexually active throughout and beyond the menopause should be encouraged to practice safer sex, to screen for sexually transmitted infections and may need specialist contraceptive advice. All women should continue to have regular cervical screening to the age of 65, and to be breast aware at all ages, but particularly in the perimenopausal and postmenopausal periods, when breast cancer risk is increased.

There is no known association between breast cancer and HIV, but breast cancer is the most common cancer in

the UK. It is therefore important that all women look after their breasts by being breast aware. Breast awareness is about encouraging women to become more aware of their bodies generally and to get to know their own breasts. Learning how their breasts look and feel at different times will help women know what is normal for them and to feel more confident about noticing any unusual changes, such as lumps or changes in the skin or nipples. Most changes won't turn out to be breast cancer, but if it is breast cancer, the sooner it is diagnosed, the easier and more effective treatment is. Even though it's uncommon, men can also get breast cancer so they also need to be breast aware.

The UK National Institute for Health and Clinical Excellence (NICE) advises that **being breast aware** means:

- Knowing what's normal for you
- Looking at your breasts and feeling them
- Knowing what changes to look for
- Reporting any changes without delay
- Attending routine breast screening if you're 50 or over

“ Once I had a rose named after me and I was very flattered until I read the description in the catalogue, no good in a bed but fine up against a wall.”

Eleanor Roosevelt (1884—1962), American First Lady

“ An archaeologist is the best husband any woman can have — the older she gets the more interested he is in her.”

Agatha Christie (1890—1976), English crime novelist

Changes in the breast

Be aware of the following changes in your breasts:

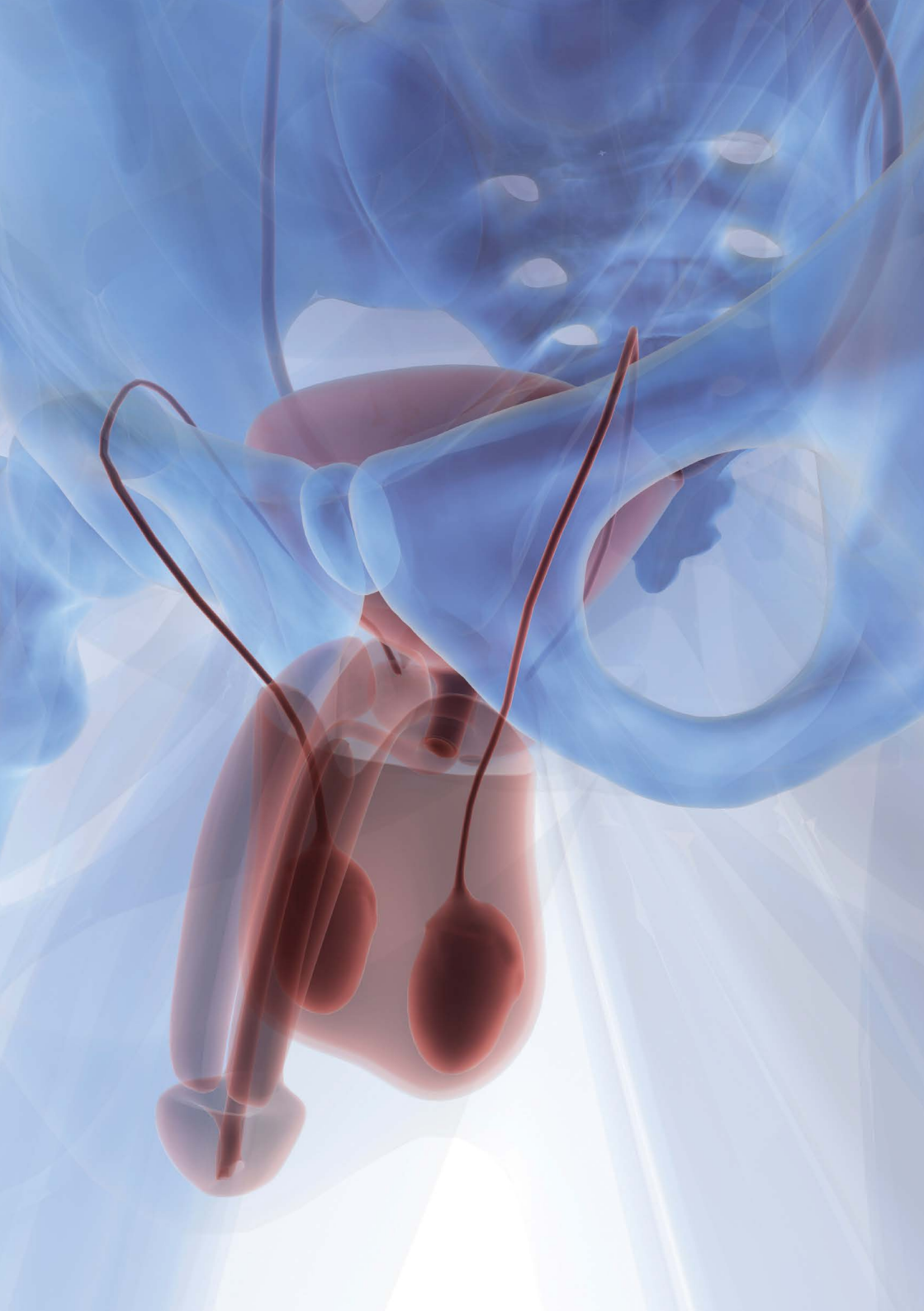
- Changes in the outline or shape of the breast, especially those caused by arm movements or by lifting the breast
- Changes in the look or feel of the skin, such as puckering or dimpling
- Discomfort or pain in one breast that is unusual, particularly if it is new and persistent
- Any new lumps, thickening or bumpy areas in one breast or armpit, which differ from the same part of the other breast and armpit
- Nipple discharge that's new for you and not milky
- Bleeding from the nipple
- Moist, red areas on the nipple that don't heal easily
- Any change in nipple position, such as pulled up or pointing differently
- A rash on or around the nipple

If you notice any of these changes, see your GP or other health professional.

The UK Breast Cancer Screening programme invites women between the ages of 50 and 70 to have a mammogram (X-ray of the breast) every 2–3 years. If there is a strong family history of breast cancer, mammography may be started at a younger age, undertaken more frequently and genetic testing may be advised.

HIV medication may cause changes in the breast, making them larger and lumpier. These lumps are usually benign cysts of breast tissue. In such instances it is vital to be on high alert, as an increase in size and presence of cysts may mask the presence of a new, more serious lump. Consult a health professional earlier rather than later with any concerns.

Breast enlargement or pain and/or swelling around the nipples can occur in men. This is called gynaecomastia and is sometimes caused by HIV medication, anabolic steroids or a hormone imbalance. It should be reported to your HIV doctor.



Sexual Life and Hormones: Endocrinology

Some evidence suggests that the more regularly a person has sex throughout life, the longer sexual desire and function may be maintained. It is therefore important to review any changes in libido (sexual desire) or sexual function when they arise, and to treat the problems promptly.

Low sexual desire may occur at any age. Frequency and interest in sex does diminish with age to varying degrees in different individuals; specifically in women it may occur suddenly with the onset of the menopause. There may be several reasons contributing to this; hormonal changes, low mood, poor sleep, fatigue, body shape changes and body image issues, relationship and family changes can all affect a woman's libido. Vaginal dryness, which is commonly experienced after the menopause, may result in discomfort and pain during intercourse, but can be treated easily with vaginal oestrogen creams and lubricants.

In men erectile dysfunction (ED), problems with ejaculation and inability to reach orgasm may occur both with ageing and HIV infection. **Autonomic neuropathy**, most commonly associated with diabetes, may also result in reduced erections and decreased sensation due to nerve damage. Other conditions that may lead to ED include vascular disease, such as that due to diabetes and smoking, as well as excess alcohol consumption and some recreational drugs.

For people taking ART it is important to recognise that certain medications, especially protease inhibitors, and some antidepressants and antihypertensive drugs can affect sexual function. Testosterone and other sex hormone levels should be measured in men complaining of a decrease in libido. Hormone tests are less helpful in women, but might be carried out in specific cases.

Various factors, such as stress, may not only cause sexual dysfunction but can exacerbate the severity of any pre-existing difficulties.

Therapy may include hormone replacement and other medications, local topical treatment for vaginal dryness, psychosexual counselling, relationship counselling or psychotherapy. Early diagnosis of sexual dysfunction should lead to early treatment so prompt consultation with the relevant health professional is essential.

It is important to discuss problems related to sexual function with your HIV doctor or other health professionals; find someone you are happy to talk with about these issues.

“Jewellery takes people’s minds off your wrinkles.”

Sonja Henie (1912—1969), Norwegian figure skater

Skin, hair and nail problems are common in people with HIV infection and in those who are ageing, but they can be treated with good care, improved hygiene and, if necessary, medication

Skin, Hair and Nails: Dermatology

Lifelong skin care will reduce the effects of ageing; this includes careful exposure to the sun, which can also reduce the risk of skin cancers. Good nail care and properly fitting footwear will help to reduce the risk of injury and infection of the feet as you age.

Skin

The skin is the largest organ in the body and is also the first line of defence against many infections. The skin usually shows the initial signs of ageing as the breakdown in the framework of the skin, known as collagen, becomes obvious with the emergence of wrinkles in about your mid-twenties. The skin also becomes less elastic, and this process is hastened by over-exposure to the sun, smoking, excess alcohol and recreational drugs.

Although skin conditions associated with ageing are usually mild, they do include skin cancer, which depends on the history of exposure to toxins, including the sun. Some localised skin cancers are less aggressive than others and are easily treated. Pigmentation of the skin changes with age, giving rise to so-called liver spots. Also, as the

underlying blood vessels become more fragile, bruising may occur more easily.

The skin is made up of two layers, the epidermis and the dermis. Squamous cell cancer (SCC) develops in the top layers and melanoma (the most serious of skin cancers) develops in the deeper layers. Basal cell cancer (BCC) develops at the bottom of the epidermis and is the commonest type of skin cancer. Skin cancer is usually slow growing, taking years before it is noticed, although it may develop quickly so any rapidly changing areas of skin should be shown to your doctor.

Everyone needs exposure to sunlight to allow activation of vitamin D in the skin and to maintain normal bone structure and function. Twenty minutes per day

Risk factors for developing skin cancer include:

- Long-term exposure to the sun
- The risk of BCC is increased by episodes of sunburn in childhood
- The risk of SCC is linked to overall sun exposure
- People with fair skin and light hair colour and eyes are more likely to burn in the sun and are at risk of more sun damage than dark-skinned individuals
- Older age
- A family history of skin cancer
- HIV infection and other causes of immune suppression

is the average recommended amount. However, it is important to take steps to reduce the risk of skin cancer in later life. If you have a history of regular exposure to the sun, especially when you were a child, you should check your skin regularly for any suspicious changes. Any skin changes that do not retreat or that increase in size after six weeks should be discussed with a health professional.

These include:

- A sore on the area of the skin exposed to the sun that does not heal, or that bleeds persistently
- Any new moles, especially if they grow rapidly, itch or bleed

- Ulcers with no obvious cause that do not heal within a month

HIV infection can also affect the skin, and skin changes are often among the first signs of dysfunction of the immune system, with conditions such as eczema and psoriasis occurring more frequently. Warts on the soles of the feet (verrucae) and fungal infections are also common, though easily treated. It is therefore important that a doctor checks any changes in the appearance of the skin as early as possible. HIV infection doubles the risk for the serious skin cancer melanoma and when it does occur in HIV infection, it behaves more aggressively.

Nail conditions

Peri-ungual (next to the nail)

warts: are due to infection with human papilloma virus. These occur especially in people with compromised immune systems.

Chronic paronychia (pustules in the nail bed): are caused by bacterial infections and may be difficult to treat.

In-growing toenails: are one of the commonest nail problems with ageing and are due to careless

cutting of the nails, external pressure due to ill-fitting footwear, deformities of the feet and toes, sweaty feet, poor foot hygiene and/or excessive skin growth around the nail.

Infection and gangrene may be caused by a reduction in circulation and/or sensation seen with ageing, peripheral neuropathy or diabetes. Regular foot care is essential to treat and help prevent these problems.

Hair

Hair loss increases with age and the hair that remains becomes more brittle. Male-pattern balding is common but no more frequent in HIV infection. It is important to distinguish between changes that are associated with HIV infection and/or medication and those due to ageing or other conditions.

Stress, either physical or mental, may result in a condition called **alopecia**, resulting in partial or total hair loss. It is also seen in a patchy form with syphilis infection. Abnormal thyroid function can also lead to hair loss or thinning.

These conditions can be checked for at your regular appointments and onward referral made to the appropriate specialist, usually a dermatologist. Iron and thyroid hormone levels should be checked annually or earlier if hair loss is noted.

Self-help steps to reduce hair loss include the avoidance of chemical treatments for the hair such as perming and dyeing. Anxiety and stress need to be addressed. B-complex vitamins and soya supplements can help relieve both dry hair and hair loss, and the latter can also be treated with specific medication.

Nails

Nail disorders are frequent in the ageing population. In part, this is due to impaired blood circulation; increased susceptibility to fungal infections; effects of medication and wider disease processes, such as psoriasis or undetected long-standing conditions such as syphilis. As people age, nails become more brittle and

more vulnerable to injury. Awareness of the symptoms and signs is important, as early assessment and treatment help maintain good nail health. All these problems can be dealt with by a podiatrist, who can also help to cut your toe nails, which most people find difficult as they age.

Side effects of medications and drug interactions increase with age, mainly due to an increase in the number of drugs taken — polypharmacy

Any new or unusual symptoms might be related to a medication you are taking even if you have been on it for a long time

How drugs are processed by the body

Absorption: it is unclear whether age-related changes in the absorption of drugs are clinically relevant. As people grow older the level of acid in the stomach increases and the surface area of the stomach wall decreases, both of which may lead to changes in the amount of drug absorbed. This effect varies from person to person.

Distribution: body fat increases with age and some drugs that depend on fat to be absorbed may accumulate. This, coupled with age-related decreases in drug clearance, potentially increases the risk of toxic effects from these agents.

Metabolism: the biochemical pathways by which drugs are processed can be affected by ageing. Also, the proteins that transport drugs throughout the tissues may alter with age. These factors help explain the changes in side effects and drug-drug interactions in a particular individual.

Elimination: removal of drugs, or any foreign substance, from the body occurs within the gut, liver and the kidneys. Elimination via the kidneys is affected by the rate at which blood flows through these organs. This steadily declines with age and may result in an increase in the toxic effects of some drugs.

Drug Handling and Interactions: Pharmacology

Ageing affects the ability of the body to process medications, both prescribed and non-prescribed.

An increasing number of drugs are prescribed with ageing, which in turn increases the number of possible drug interactions and thereby potential side effects.

Just as the speed and pattern of ageing varies in different people, the way that the body deals with drugs may also vary between individuals. However, there are some common rules. Ageing results in changes in the body that can alter the rate that drugs are processed and eliminated. These changes include increased accumulation of fat, reduced water in the cells of the body, a decrease in the amount and flow of the blood to the liver and reduction in enzymes (the chemical substances) that metabolise (break down) drugs.

Both medications and non-prescription drugs are processed by the body so that the active ingredient may be utilised to do its job. This occurs in a number of stages, including absorption of the drug from the digestive system, processing (metabolism), distribution to body compartments, and elimination (or excretion).

All body systems begin to slow down with age at the same time that diseases of ageing start to develop, hence the requirement for greater numbers of medications to keep you healthy,

sometimes called polypharmacy. This is why it is vital not to just blindly treat each condition associated with HIV and ageing without considering the problems that might occur from using so many different medications at once.

Many medications interact with each other, and interactions between drugs may be worsened because the metabolism of each drug is also affected by ageing. Regular checks of your list of medications and how to take them with health professionals, especially HIV pharmacists, are important. This will ensure correct dosing and reduction of possible side effects; any new side effects should be reported to your doctor immediately. Make sure you let all of your doctors know which medicines you are taking to reduce potential drug interactions.

Common medications that interact with various antiretrovirals include certain statins; prescribed drugs and over the counter medicines that reduce stomach acid; warfarin used to thin the blood and many steroid preparations such as nasal sprays. It's very important to check with your HIV doctor or pharmacist before using these agents if you are on ART.

There is a wealth of information about HIV drug interactions to view and download at **www.hiv-druginteractions.org**.



IT'S CHEAPER THAN GETTING A FACELIFT

Section 4

The Future



HIV and Ageing Research

Ageing is an important issue for everyone, whether or not they have HIV infection. Older people are increasingly being infected with HIV and more people are living and ageing with HIV infection. In the last five years, the ageing effects of HIV infection have opened up many new areas of research.

Research into ageing and HIV infection somewhat lagged behind research into other aspects of HIV infection, as long-term survival with the virus was initially in doubt, but much is now underway. The advent of ART and other advances in healthcare have resulted in increased life expectancy and all the challenges that both HIV and ageing have on the immune system now need to be addressed.

Ageing, in general, is a hot topic; slowing it, halting it or even reversing it is the Holy Grail for many researchers and health professionals. Sections in this guide have outlined conditions, including heart disease, cancers and bone loss, which affect people with HIV infection at an earlier age. Although research has described many age-related issues in people with HIV infection and suggested some reasons why they occur, there are significant gaps in medical knowledge that must be filled with carefully designed studies.

One reason why research can now focus on ageing is, of course, the transformation of HIV infection into a chronic, manageable condition thanks to effective ART.

Surveillance in the UK shows that the proportion of people aged over 50 accessing HIV care increased from 1 in 10 in 1999 to 1 in 5 in 2011. It has been estimated that by 2015, 50% of people with HIV infection in the US will be 50 and older. At least part of the increase in HIV in the over 50s is driven by new infections. Unfortunately, older patients, who have a higher risk of disease progression and complications, are also more likely to be diagnosed late. Data relating to the transmission rate and risk factors for HIV in older age groups are crucial.

Research is the cornerstone of advances in HIV care and there are many levels at which further research is required. Some examples include:

- What are the risk factors for HIV transmission in older people? Does the wider availability of drugs to treat erectile dysfunction play a role? Does vaginal atrophy in older women increase the risk of HIV acquisition? How can testing be targeted effectively in this age group?
- Exactly how much extra risk in ageing do HIV and ART confer? ART and HIV both increase cardiovascular disease, but what is the balance? Can the presence of inflammatory markers or measures of blood vessel health be used to better identify patients for earlier ART, or additional treatments? Aspirin is beneficial in preventing cardiovascular disease in patients with diabetes. As some studies show, HIV infection may be similar to diabetes in terms of cardiovascular risk – could aspirin help?



- How should people be screened for cancers? Which? When? How? It is well accepted that anal cancer is increased in people with HIV infection but there are limited data regarding progression of early abnormalities, cost-effectiveness of screening, which methods are best, and what treatment should be given.
- Older age groups are frequently excluded from clinical trials, as are those with significant medical problems. More concentrated efforts to study antiretrovirals and detailed safety studies in these groups could optimise therapy and monitoring.
- Should ART be tailored according to age? If trials of lower doses of antiretrovirals in older people prove effective could this strategy reduce toxicity? Are there any unforeseen toxicities from these agents with increasing age?
- What about investigational therapies for general ageing? Although work on these is in the very early stages, treatments that prevent telomere shortening, a hallmark of cell ageing, could be beneficial for some aspects of HIV-related premature ageing.
- What are the best models of care for people with HIV infection who are ageing? Service-based research is crucial to determine the most effective, safe and economical way to manage those ageing with HIV. Government policy is shifting the care of long-term conditions into the community but there is

little information as to whether this is a better strategy for those with HIV than the current hospital-based provision of care. Studies to investigate quality of care, patient satisfaction and cost-benefit should guide future developments for care provision for those ageing with HIV.

- What is the best way to investigate, prevent and manage age-related medical conditions in HIV? Should HIV infected individuals with low bone mineral density be treated more aggressively? Should routine tests be performed regularly to identify cognitive dysfunction and if so, what tools should be used? Should there be different blood pressure and cholesterol targets for individuals with HIV?

Trials that are specifically designed to address age-related issues are urgently needed with representation of all older individuals within them. Pooling of data and experience across clinics would enable improved information of the incidence and risk factors for age-related conditions and help design interventions to optimise the health of people with HIV infection. Research into ageing and HIV must provide results that are meaningful, informative and which will point to improved treatment options.

Only through carefully designed and executed studies will we be able to answer the many questions that exist on how best to care for those ageing with HIV.

HIV infection and associated diseases need to be considered as possible diagnoses by all who provide care for older people

Under- or misdiagnosis of HIV is frequent and healthcare providers need increased education and awareness

Targeted sex education for people over 50 is needed to minimise the risk of older people being infected with HIV or other sexually transmitted infections

Stigma due to the association of HIV with drug use and homosexuality may lead them to hide risk factors or their diagnosis from providers or families

Care for all people infected with HIV may be compromised by the move from specialist hospital-based clinics to care in community settings

Access to long-term social and nursing care may be more difficult for people with HIV infection due to stigma and their need for it at a younger than normal age

Controversial Issues in HIV and Ageing

The interaction of HIV and ageing and the earlier manifestation of age-related illnesses such as heart disease, osteoporosis and neurocognitive decline not only requires further research, but will need planning and development of new health policies to help with the impact on health and social services.

HIV is associated with an increased risk of a broad range of age-associated illnesses (co-morbidities) and the number of people so affected is rising as life expectancy increases. A comprehensive approach to the management of HIV in ageing individuals, including optimising ART and earlier review of the known risk factors for age-related conditions, is essential.

Since the advent of ART fewer people established on HIV therapy are being admitted to hospital, although as the infected population ages this will change. However, due to rising numbers of people living with HIV, there is a greater demand for outpatient services, which have expanded to include other specialist services involving cardiology, kidney, cancer, bone and other specialists. Even within HIV outpatient clinics demand is changing. This is due to ever evolving treatments, their side effects, and the complexity of care for people ageing with HIV infection and co-infections, such as hepatitis B, C and tuberculosis.

The rising number of new HIV infections in those over the age of 50 is touted as a new epidemic. Many of these individuals present late, not only because HIV education is not targeted at the ageing population but also because many health professionals do not have HIV infection at the top of the list when investigating symptoms in older patients, especially those considered at low risk. Some research has shown that the older a person is when first infected with HIV, the greater the CD4 cell loss, although this can be improved by commencing

treatment promptly. It is crucial that there is increased surveillance to detect new HIV infection in the older population so that appropriate therapy is initiated and further disease prevented. All these issues put an increased burden on already compromised health services. Cost restraints and the change in ethos in running an efficient health service mean that cheaper options, such as moving specialist healthcare into the community and GP surgeries, are an increasing probability. The concept of a one-stop shop for holistic HIV care may be endangered. New models of care must be explored whilst maintaining excellence and access to therapy and services.

Research into HIV infection and ageing is in its infancy, but may well determine the outcome of HIV services. Such research is, however, being compromised by decreased funding.

The stigma of HIV infection as people age may also bring new challenges. For example, long-term care, in residential and nursing homes and in the community, already a very contentious issue with respect to funding, may be more difficult for a person with HIV infection. Those who need to reside in such institutions may find the, albeit slightly decreased ignorance with respect to HIV infection still manifests as stigma and possibly poorer care. The activist movements seen in the early days of HIV infection, now with grey hair, may need to rise again to address the challenges of HIV and ageing.

“ Perhaps the only way in which I feel growing older is harder for me as an HIV positive man is that I never expected to have to do it. I am not prepared. I did not expect to have to give up smoking, or take up exercise or have a pension and so I arrive here without the preparations others of my age might have made.”

Further Information: Web Links and Resources

GENERAL INFORMATION ABOUT HIV & AGEING

www.natap.org

www.i-base.info

www.aidsmap.com

www.hiv-druginteractions.org

www.aahivm.org/hivandageingforum

www.thebody.com

ACCOMMODATION

The **Elderly Accommodation Counsel (EAC)** offers information, advice and guidance on any aspect of care, support or housing for older people

Freephone **0800 377 70 70** or visit www.eac.org.uk

AGE UK

For further details of your local **Age UK**, call the Age UK Information Line

Freephone **0800 169 6565** or visit www.ageuk.org.uk

For publications, resources and events for and about older lesbian, gay, bisexual and transgender (LGBT) individuals visit

www.ageuk.org.uk/health-wellbeing/relationships-and-family/older-lgbt-communities/

Age UK Camden leads a pan-London older LGBT service, "Opening Doors London", providing social activities, befriending and signposting for LGBT men and women aged 50 and over. This includes a monthly support and social group for older gay, bisexual or transgender men who are living with HIV

Contact the co-ordinators on **020 7239 0446** or visit www.openingdoorslondon.org.uk

POSITIVELY AGEING FORUM (PAF)

This independent forum has a London-wide membership and is a member of Age UK's "Speaking Up For Our Age" national network of forums for older people. Membership is open to anyone who considers themselves to be ageing with HIV

Contact by post: **Positively Ageing Forum (HIV)**, c/o River House, Furnival Gardens, Hammersmith, London W6 9DJ or visit www.pafhiv.org.uk

NATIONAL LONG TERM SURVIVORS GROUP

The **National Long Term Survivors Group** is a user-led organisation for people who have been living long-term with HIV

Contact by post: National Long Term Survivors, BM LTSG, London WC1N 3XX or visit www.nltsg.org.uk

SUPPORT ORGANISATIONS

CARA, a pastoral organisation, offers a variety of groups for older people living with HIV, as well as a social welfare support service for over 50s living with HIV. This provides one-to-one social work support on issues such as housing, welfare benefits, advice and advocacy, small grants case-work, as well as specialist health information seminars

Contact by post: Cara Trust, 240 Lancaster Road, London W11 4AH or visit www.caralife.com

Royal Voluntary Service is an age-positive charity whose volunteers deliver personal and practical support to help older people. Visit www.royalvoluntaryservice.org.uk

POSITIVELY UK

This is an organisation run by positive people promoting the interests among others of older people living with HIV.

Call **020 7713 0444** or visit **www.positivelyuk.org**

ALZHEIMER'S SOCIETY

The National Dementia Helpline offers support to all people with dementia and their carers

Freephone **0845 300 0336** or visit **www.alzheimers.org.uk**

BHIVA: BRITISH HIV ASSOCIATION

Established to provide excellence in the care of those living with and affected by HIV. It acts as a national advisory body to professions and other organisations on all aspects of HIV treatment. BHIVA also provides a national platform and contributes representatives for international, national and local committees dealing with the management of HIV infection

Call **0208 369 5380** or visit **www.bhiva.org**

ROYAL NATIONAL INSTITUTE FOR THE BLIND (RNIB)

Supports blind and partially sighted people

Call **030 3123 9999** or visit **www.rnib.org.uk**

CAREERS & LEARNING WEBSITES

www.direct.gov.uk

www.reed.co.uk/courses/

University of the Third Age at **www.u3a.org.uk**

The Open University at **www.open-university.co.uk**

CARERS

The **Princess Royal Trust** runs a network of carer centres around the country as well as providing help and advice. Call **0844 800 4361** or visit **www.carers.org**

COUNSELLING

British Association for Counselling and Psychotherapy at **www.bacp.co.uk**

UK Council for Psychotherapy at **www.psychotherapy.org.uk**

Pink Therapy at **www.pinktherapy.com**

Relationship Advice from RELATE at **www.relate.org.uk**

Psychosexual counselling is offered at **www.ipm.org.uk**

ROYAL NATIONAL INSTITUTE FOR DEAF PEOPLE

Provides information on hearing loss and services for the hard of hearing

Visit **www.actiononhearingloss.org.uk**

EXERCISE & HEALTHY LIVING

The **YMCA** runs Positive Health programmes for people with HIV infection with a "Senior Fitness

Programme." Call **020 7712 7120** or visit **www.ymcaclub.co.uk**

The **Living Well Programme** provides advice on positive self-management of HIV
Call **020 3137 3373** or visit **www.livingwelluk.com**

Visit the **British Heart Foundation** at **www.bhf.org.uk** or **www.heart.org**

The **Food Standards Agency** provides advice at **www.food.gov.uk** and
www.nhs.uk/livewell/healthy-eating

Breast awareness, an important site for all health issues associated with the breast is at
www.cancerscreening.nhs.uk/breastscreen/breastawareness

Good websites concerning the menopause (although with no reference to HIV) are
www.menopausematters.org.uk and **www.womens-health-concern.org**

DENTISTS

The British Dental Health Foundation is at **www.dentalhealth.org**

GP & OTHER HEALTH SERVICES

GPs can be found by visiting **www.nhs.uk/servicedirectories**

The **General Osteopathic Council** provides information about osteopathy services
Call **020 7357 6655** or visit **www.osteopathy.org.uk**

The **Society of Chiropractors & Podiatrists** provides information on foot clinics and health
Call **020 7234 8620** or visit **www.feetforlife.org.uk**

Stopping smoking: most hospitals and GP surgeries have in-house smoking cessation services or contact
the **NHS Stop Smoking Helpline**

Freephone **0800 022 4332** or visit **www.quitline** or **www.smokefree.nhs.uk**

For people affected by cancer, **Macmillan nurses** are free and a valued and trusted source of expert
information, advice and support. Freephone **0808 808 0000** or visit **www.macmillan.org.uk**

The Stroke Association supports stroke survivors to make the best recovery they can
Call **0303 3033 100** or visit **www.stroke.org.uk**

LEGAL & FINANCIAL SERVICES

The following websites can provide a range of advice for those who are older

www.compassindependent.co.uk

www.equityrelasecouncil.com

www.gayfinance.com

www.hivmortgages.com

www.justretirement.com

www.lifebroker.co.uk

www.unbiased.co.uk

www.unusualrisks.co.uk

Pension Service: for details of state pensions, including forecasts and how to claim your pension
Freephone **0845 60 60 265** or visit **www.thepensionservice.gov.uk**

OFFICE OF THE PUBLIC GUARDIAN (OPG)

For information and forms for Lasting Powers of Attorney

Freephone **0845 330 2900** or visit **www.justice.gov.uk/about/ogp**



Appendices

Diet, Glossary & Regular Tests

Appendix 1

Diet, Healthy Eating and Exercise – Top Tips and Advice

People living and ageing with HIV face many challenges and a healthy diet can help, as it may prevent disease or reduce progression of conditions associated with ageing and HIV. It can also reduce the risk of heart attacks and stroke, bone fractures, neurocognitive impairment, diabetes and metabolic problems and slow the development of cancer.

Eating well helps to take care of not only your body and how you feel but it also

plays an important role in optimising your health. Food has a powerful impact on the biochemical processes and general environment of your body and helps offset the negative effects of HIV, antiretrovirals and ageing.

Good nutrition is about providing your body with quality fuel but also improving digestive function, balancing hormones naturally and eliminating toxins and waste.

Foods that should be on your plate daily

- **Vegetables and fruit:** Eat at least five portions of fruit and vegetables daily as these provide many nutrients to support health such as fibre, vitamins and minerals. Dietary fibre reduces cholesterol levels and many vitamins and plant nutrients possess antioxidant and anti-inflammatory properties to keep the body healthy. Antioxidants are found in brightly coloured vegetables and fruit, so make sure there is plenty of colour on your plate. Vegetables are recommended in greater amounts than fruits due to their higher potassium and lower sugar content.
- **Whole grains:** are a good source of B vitamins, minerals and fibre, all of which are important for energy production and liver and gastrointestinal support. Refined grains (such as pasta, white rice and flours) have had most of their valuable nutrients removed through processing so are less beneficial. Include variety in the choice of your whole grains such as whole-wheat,

quinoa, buckwheat, brown or red rice, oats and barley.

- **Pulses:** also called legumes, such as beans and lentils contain fibre, vitamins and minerals. When these are combined with whole grains (lentils and rice for example), the combination becomes a complete source of vegetable protein that provides essential amino acids.
- **Protein:** is a key nutrient essential for repairing body functions, producing hormones and energy and supporting the brain and nervous system. Combine animal protein (white fish, sardines, tuna, salmon, lamb, pork, chicken, cottage cheese, seafood, oysters) and plant protein (lentils, seeds, quinoa, nuts, rice, beans, peas, chickpeas, tofu) for maximum benefit. Animal and plant foods rich in protein also provide the body with vitamins and minerals, as well as omega-3 and omega-6 oils, which may help to reduce inflammation triggered by excess body fat and insulin resistance.

- **Healthy fats:** both saturated and unsaturated are necessary for good health and the key is to bring variety between them within your daily diet, whilst avoiding damaged or trans-fats.

Healthy fats are those that occur naturally in foods and have not been damaged through commercial processing. Sources of healthy fats are vegetables (olives, avocados), nuts and seeds, grass-fed animals and dairy products and oily fish. Omega-3 from oily fish (also available in lower quantities in vegetable oils, nuts and seeds) helps reduce cholesterol and triglyceride levels, keep blood vessels supple and flexible and may reduce risk of cognitive decline.

Damaged fats (or trans-fats), which have been heavily processed, are found in commercial mayonnaise, crisps, biscuits, cakes, puddings, pastries and other foods containing hydrogenated fats such as margarines; these are bad for you and should be avoided.

A simple healthy eating plan

- **Change to a plant-based diet with plenty of vegetables and fruits.**

Eat a minimum of 5 portions of vegetables and fruits daily; the more, the better. At least two thirds of your intake should be vegetables. You can estimate a portion size by using the amount of vegetable or fruit that can fit into your cupped hand. In order for you to make sure you are eating a variety of vegetables and fruits, aim to have in your daily diet a rainbow of coloured foods.

- **Eat whole grains and legumes on a regular basis** to help reduce cholesterol and improve bowel function and weight control (as they increase the feeling of fullness).

Include peas, beans and lentils, oats and whole grains (wholemeal, oat porridge, higher fibre bread, whole-wheat pasta and brown rice). The amount of whole grains on your plate should be less than the amount of vegetables.

- **Eat protein at each meal or when you snack** - animal protein and plant sources of protein include the following:

- » **Pulses combined with grains** should be eaten daily.
- » **Animal products** as a good source of complete protein are recommended 5–6 times a week. Examples are white meat, fish (white and oily fish) and eggs and are best if they are organic or come from grass-fed animals.

- » **Red meat** should be eaten moderately, 1–2 times a week.

- » **Butter** of good quality such as that made from grass-fed/organic milk is recommended over any type of margarine or low-fat spread as the latter contain processed fats. Use butter in moderation.

- » **Oily fish** should be eaten 2–3 times per week. Those who don't like fish can take omega-3 oil supplements (recommended dosage 500mg each day). Oily fish are those with darker or coloured flesh: sardines, mackerel, pilchards, salmon, tuna, swordfish, kippers, herrings, pilchards, sprats, tilapia and red snapper, and can be fresh, frozen or canned.

- **Introduce a variety of healthy fats into your daily diet** in the form of nuts, seeds, olive oil and avocado oil. For example: create your own salad dressing with olive oil, lemon and mustards instead of using commercial dressings.

- **Instead of cakes, pastries, crisps and biscuits try healthier snacks** such as fruit, crackers (oats, rye, rice, spelt), walnuts or seeds.

- **Aim for protein in your snacks combined with healthy fats**

to help to balance your blood sugar levels and support weight management (increase satiety). For example: a cracker topped with a slice of ham, turkey, half an avocado or cottage cheese; hard-boiled egg and a stick of celery or carrot; a small handful of nuts with an apple or pear, etc.

- **Base your diet on meals that have been prepared from fresh and unprocessed foods**, this will naturally provide a low-salt diet.

- **Limit salty, pickled or brined foods** as too much salt increases your blood pressure, a risk for heart disease and stroke. However, most of the salt eaten comes from processed food such as ready-made meals, soups and cereals and it is possible to be eating excess amounts of salt without realising it. The label on all pre-packaged foods will state the amount of salt in the foodstuff.

High is more than 1.5g salt per 100g (or 0.6g sodium)

Low is 0.3g salt or less per 100g (or 0.1g sodium)

- **Use a variety of spices and herbs** (preferably fresh) on a daily basis. They will bring flavour to your salads or cooked dishes and are a good source of plant nutrients with valuable antioxidant and anti-inflammatory properties. Examples: ginger, turmeric, chillies, garlic, thyme, rosemary, parsley etc. Many

can be grown easily on the kitchen windowsill.

- **Hydration:** Make sure you drink plenty of water daily. The average requirement for an adult is 1.5–2 litres of fluids a day. If you exercise or when the weather is hot you may need to increase your intake. A good way to do this is to drink green or herbal teas, fresh vegetable juices (make sure you buy a brand low in salt if not made from fresh). Reduce to a minimum sugary drinks, fruit juices (high in sugar), caffeinated drinks (coffee and black tea) and alcohol.

- **Drink alcohol sensibly** as too much can increase blood pressure, is bad for your brain function and increases the risk of liver disease and certain cancers, so keep within recommended limits:

- » Recommended limits for sensible drinking: for men, up to 21 units of alcohol per week and for women up to 14 units of alcohol per week
- » A unit of alcohol is a small glass of wine, a half pint of beer or lager or a pub measure of spirits
- » A large glass of higher alcohol wine or a pint of stronger beer or lager will contain 3 units
- » Everyone should aim to have two consecutive alcohol-free days each week

Tips on organising your diet and cooking

Introduce changes in your diet step by step.

For example, start by increasing your vegetable and fruit intake. Then continue by introducing whole grains and/or pulses. Afterwards you can try new sources of animal and plant protein, and so on. This will leave you time to discover new foods and to experiment with preparing and cooking them to your preferences. Introducing changes slowly will allow you to adjust to your new diet at your own pace and to know which ones make you feel good with less chances of finding it too stressful or overwhelming.

Wash your vegetables and fruits.

It's important when preparing your vegetables or fruits to take time to wash them carefully with water, especially if you are unable to obtain organic vegetables and fruits.

Fats and oils become even more saturated when heated at too high a temperature. Try and keep heating them to a minimum.

Use water instead of oil for cooking

as much as possible. Add a teaspoon of olive or coconut oil for taste towards the end of cooking if required.

Oils are best if cold pressed and extra virgin.

Examples: olive, peanut, hemp, avocado, coconut, walnut, hazelnut, unrefined sunflower and sesame seed. Coconut, peanut, olive and hazelnut oils are the best for cooking.

Save time and energy. If you find it difficult to always have fresh food available, you can save time by stocking your freezer with frozen vegetables, fish and meat. If you are cooking for yourself, for two or even for a family, you can prepare and cook in advance in bulk, foods such as rice and stews, then freeze individual/large portions for when you are busy or not feeling well.

Preparing snacks. If you are away from your home, using small sealed freezer bags can be a good way of transporting your snacks. Boiling several eggs at a time and storing them in your fridge can save time in the morning.

Cooking for two or more. Inviting friends to eat with you can be more fun and means that other people invite and cook for you. Making an occasion of eating or even meeting for a snack or tea can have lots of added benefit for your social life.

Nutrition & Lifestyle

To reduce cardiovascular risk:

- Eat oily fish 2–3 times per week. Those who don't like fish can take omega-3 oil capsules. Aim for 500mg of omega-3 oils each day.
- Reduce saturated fats. The liver builds cholesterol very easily from these fats, so try to limit foods with high saturated fat levels by choosing lower-fat alternatives.
- Dietary fibre can help reduce cholesterol levels.
- Eat at least five portions of fruit and vegetables daily to provide the vitamins needed to keep the heart healthy. Antioxidant vitamins are found in brightly coloured fruits and vegetables, so make sure there is plenty of colour on your plate.
- Exercise to reduce fat around your abdomen and keep a healthy weight.

To reduce the risk of stroke:

- Keep body weight within the normal range as being overweight is associated with increased blood pressure, a major risk for having a stroke.
- Keep active as exercise reduces blood pressure.
- Limit salty, pickled or brined foods as too much salt can increase blood pressure.
- Eat plenty of fruit, vegetables and oily fish and limit saturated fats to help keep cholesterol in check.
- Drink sensibly as drinking too much alcohol can increase blood pressure.
- Exercise to reduce fat around the middle and maintain a healthy weight.

To reduce the risk of fractures:

- Regular exercise helps to keep bones strong.
- Vitamin D helps the calcium that is eaten to be absorbed by the body.
- A healthy balanced diet with plenty of foods containing protein, calcium, vitamin K and vitamin D helps to reduce loss of strength from the bones.
- Sunlight stimulates production of vitamin D in the skin and 20 minutes of sun a day (longer if you have dark skin) is the best way to maintain good levels, which helps to strengthen bones.
- Keep to a healthy weight – being too thin or very overweight can increase the risk of having a fracture.
- Avoid high-dose vitamin A (above 1500 mcg daily) as it interferes with the good effects of vitamin D.

To reduce the risk of cognitive decline:

- Eat oily fish 2–3 times per week.
- Aim to eat at least five portions of fruit and vegetables daily. This will provide the vitamins and minerals needed for healthy brain function.
- Drink sensibly, as too much alcohol is bad for your brain function, so keep within recommended limits.

To reduce the risk of cancer:

- A healthy diet has been shown to reduce risk of some cancers. General advice includes:
 - » Cut down on saturated fat
 - » Eat more dietary fibre
 - » Aim to eat at least five portions of fruit and vegetables daily.
- » Avoid eating too much smoked or processed meat
- » Limit salty, pickled or brined foods
- » Drink sensibly as drinking too much alcohol is associated with certain cancers.

Exercise

- Exercise to keep a healthy weight and reduce accumulation of fat around your abdomen, which is bad for your health in many ways.
- Keep active as regular exercise reduces blood pressure and helps to keep bones strong. Exercise may help to reduce stress and improve your immune function. Strength or endurance training can help to avoid diabetes.
- Aim to exercise vigorously for 30 minutes at least three times per week and do some kind of movement activity every day.
- Vigorous exercise can include jogging, swimming, dancing, gardening, fast walking, as well as going to the gym.
- Check with a doctor or a physiotherapist that your exercise plan is safe.
- Weight-bearing exercise strengthens bones and can include jogging, walking, dancing, gardening, walking up stairs, stretching, yoga and Pilates, as well as going to the gym.
- Swimming is not a weight-bearing exercise but is very good for other aspects of health.

Tips for eating and drinking with exercise:

Dehydration may reduce the benefit of exercise.

To remain adequately hydrated:

- Drink before becoming thirsty
- Drink before starting to exercise
- Keep fluids to hand and drink while exercising
- Drink after exercising
- The fluid drunk around exercising should be additional to the usual 1–2 litres (6 to 8 glasses) required to keep adequately hydrated on a daily basis

Exercise should be preceded by a high-energy snack such as a banana or some dried fruit, or diluted fruit juice or squash

Ready-made sports drinks are not essential and are often very high in sugars, which may result in tooth decay; instead diluted fruit juice (such as apple or grape) are preferable.

Vitamins and Supplements

A healthy diet should provide the Recommended Daily Allowance (RDA) of all the vitamins and minerals required by the body to perform all the functions necessary to maintain good health. However, some people argue that as many foods are intensively farmed in modern agriculture, the soil has become depleted resulting in insufficient nutrients being absorbed by food grown in the earth.

Several studies conducted worldwide have confirmed that certain vitamins promote good health and slow down the rate of deterioration in the body. Vitamins and minerals are chemically active substances, which is why they may have a good effect but it is also why they can interact with medication. The manufacture and sale of vitamins, minerals and supplements is not regulated, making it difficult to assess and control the amounts taken, to monitor effects and, crucially, to identify complications.

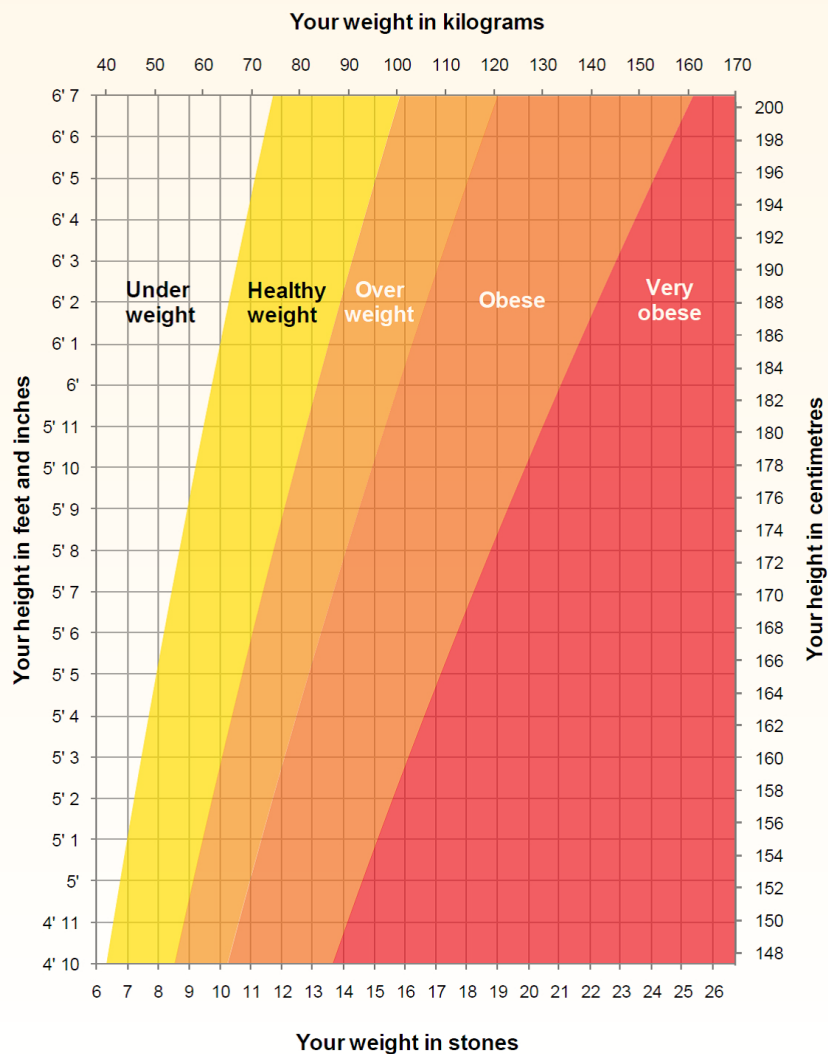
There is no good evidence that taking vitamins above the RDA will affect HIV infection or slow the effects of ageing. In common with conventional medicines, high doses of vitamins, minerals and supplements may cause interactions or harm. The same applies to supplements and herbal remedies.

In addition, taking lots of vitamins and/or minerals increases the pill burden, which may be high already; extra pills may make taking essential HIV medication more difficult. It is important to inform all health professionals about all non-prescription medication that is being taken. A dietician can advise on dietary interactions with vitamins, minerals and supplements.

Appendix 2

Body Mass Index

Keep an eye on your ideal healthy weight using this simple tool, which tells you, at a glance, what it should be.



Glossary of Terms

Activities of daily living (ADLs): health professionals routinely refer to the ability or inability to perform ADLs, such as washing, toileting, dressing, cooking, shopping and cleaning, as a measure of the functional status of a person. This is useful for assessing the elderly and those with chronic illness, to evaluate what type of healthcare services they may need.

AIDS (Acquired Immune Deficiency Syndrome): having one or more of a range of infections and cancers that occur as a result of damage to the immune system caused by the human immunodeficiency virus (HIV). Such infections or cancers are called opportunistic because they take the opportunity of damage to the immune system to cause disease. AIDS is mostly treatable and preventable by antiretroviral medication (ART).

Alopecia: loss of hair from areas of the skin where it is normally present. It occurs most commonly on the scalp in small round sections, but may involve the whole head including eyelashes and eyebrows, and even the whole body.

Antiretroviral therapy (ART): medication given to suppress HIV and reverse the damage it has caused and to prevent further immune deterioration.

Atherosclerosis: thickening of the inner wall of an artery, thereby reducing blood flow. If the coronary (heart) arteries are involved this may cause angina (chest pain) and a heart attack, and if arteries supplying the brain are involved a stroke may result.

Autonomic neuropathy: this occurs when the nerves that control automatic body functions (those you don't think about) – for example, breathing and heart rate – are damaged. If these nerves are affected, most commonly by diabetes, you may develop very low blood pressure, erectile dysfunction, bowel upset or urinary incontinence.

Body mass index (BMI): this is calculated from an individual's height and weight and indicates levels of obesity, see Appendix 2.

Oral Candida (thrush): infection with the fungus *Candida albicans* usually occurs in the mouth, but is also seen on the feet and in the genital tract. It is usually kept under control by bacteria, but with a compromised immune system, it may grow out of control, resulting in pain on swallowing and other symptoms.

Carcinogens: any agent capable of causing cancer, such as chemicals, environmental factors and certain viruses.

CD4 count: is a measure of the cells particularly targeted by HIV, the level of which indicates the extent that HIV is affecting the immune system.

Cardiovascular disease (CVD):

cardio (heart)-vascular (blood vessels) – sometimes known as coronary artery disease (CAD). Cerebro (brain)-vascular disease refers to the condition that may result in a stroke or dementia.

Cirrhosis: develops as a result of persistent damage to liver cells; surviving cells form nodules that are interspersed with scar tissue (fibrosis). The scar tissue prevents adequate blood supply from reaching the nodules and so the liver can no longer effectively perform its function.

Cognitive function: covers memory and concentration span, along with thoughts, feelings and perceptions. Cognitive behavioural therapy (CBT) addresses cognitive dysfunction by using thoughts, feelings and perceptions that might change unhelpful behaviour.

DNA: the abbreviation for the genetic code (genes) or hereditary material that is within all the cells in the body.

Environmental factors: climate, altitude and toxins that might be present in the environment and that may cause disease.

Enzymes: substances present in the body that affect the rate of certain chemical reactions. Liver enzymes, for example, if raised above their normal

levels in the blood may indicate damage to the liver, where they are stored. Damage to heart muscle in a heart attack may be diagnosed by the release of a heart enzyme.

Erectile dysfunction (ED): used to describe disruption of the normal process of erection of the penis, which may have many causes, both physical and psychological.

Fibrosis: fibrous tissue may be formed as an exaggerated healing response to injury, infection or inflammation. Fibrous tissue may replace specialised structures such as liver tissue, and cause impaired function.

Free radicals: highly reactive substances that are present in the body and that facilitate many necessary chemical reactions. There is a theory that these free radicals build up as we age and that they are involved in the ageing process.

Genes: molecular units of heredity contained within DNA.

Haemoglobin: the oxygen-carrying units of the red cell in the blood, the level of which reflects whether anaemia is present or not.

HbA1c test: measures the average level of glucose in the blood over the past 2–3 months, and is a useful test to diagnose and monitor diabetes.

High density lipoprotein (HDL): the type of cholesterol that allows it to be excreted from the body and is therefore known as good cholesterol.

Insulin resistance: occurs if there is normal production of the hormone insulin, which processes glucose (sugar) in the blood, but an abnormal response (resistance) of the receptors that recognise the insulin. It is a precursor to developing diabetes.

Lipodystrophy: this refers to the redistribution of fat that is common with HIV and associated with the use of some antiretrovirals. There are two main types, lipoatrophy (fat loss, for example in the cheeks) and lipohypertrophy (fat accumulation, for example around the waist).

Longevity: the length of an individual life, which is affected by genetic and environmental factors, as well as disease.

Low density lipoprotein (LDL): effectively bad cholesterol. It is a calculated value and forms part of the overall cholesterol profile.

MRI (magnetic resonance imaging): MRI is a diagnostic scanning technique that provides a three dimensional image of organs, muscles and bones within the body without using X-rays or other radiation.

Myocardial Infarction (MI): also known as a heart attack or a coronary. It occurs as a result of a blockage in one of the arteries (coronary arteries) supplying the muscle of the heart. If the blockage occurs in a major artery, the attack may be fatal. Rapid access chest pain clinics have improved survival by preventing heart attacks and inserting stents into arteries that have become blocked before further muscle damage can occur.

Osteoporosis: the word osteoporosis literally means “porous bones”. It occurs when bones lose an excessive amount of their protein and mineral content, particularly calcium; there may be a family predisposition. Over time, bone mass, and therefore bone strength, is decreased. As a result, bones become fragile and break easily. Even a sneeze or a sudden movement may be enough to break a bone in someone with severe osteoporosis.

PCP: a severe pneumonia, which may develop during seroconversion illness but occurs most commonly with CD4 counts lower than 200.

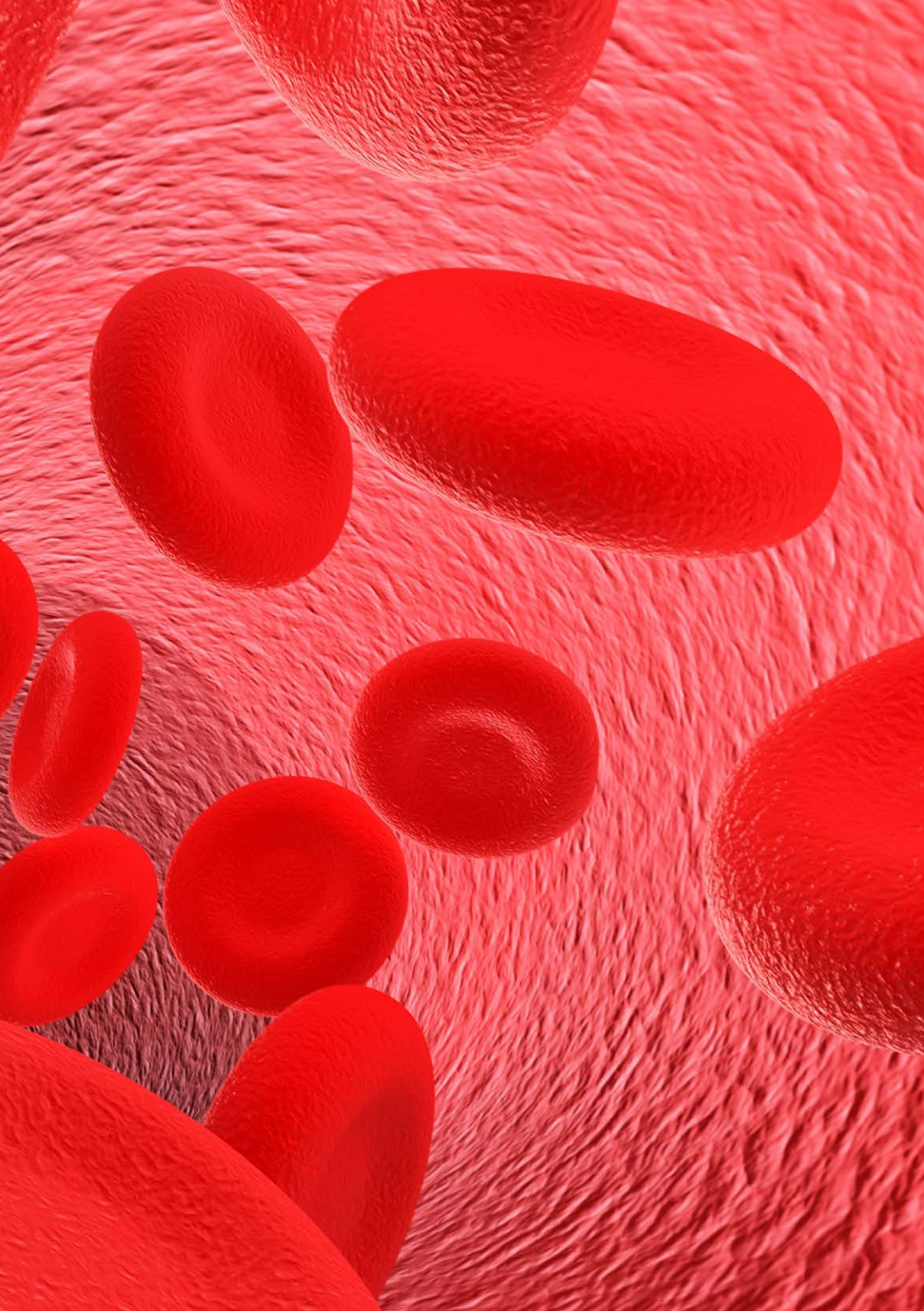
Peripheral neuropathy: pins and needles, numbness or a burning sensation that begins in the peripheries (the hands and the feet) and may spread upwards and is due to damage to the nerves. It has multiple causes that include both HIV infection and ART.

Stroke: also called a cerebro (brain)-vascular (blood vessel) accident (CVA) and is caused by a clot blocking the blood vessel, or a bleed from the blood vessel, either way depriving the brain tissue of vital blood supply. Depending on the area of the brain affected, vision and speech may be impaired as well as paralysis of one or more limbs.

Triglycerides (TGs): a type of lipid (fat) and the main type to be stored in the body to act as an energy reserve and provide insulation against cold and padding for the skeleton.

Type-2 diabetes: the type of diabetes that develops in older people and those who have excess weight due to deterioration in the function of the pancreas, leading to insulin resistance first and then frank diabetes.

Urea and creatinine: both these substances are breakdown products that are excreted in the urine: urea is a by-product from the processing of proteins by the liver, creatinine is a waste product from muscles and both are transported to the kidneys for excretion. If the kidneys are damaged, these substances are not excreted and the blood levels of urea and creatinine rise. These levels can indicate the extent of kidney failure.



Regular Tests

Many people over 50 who read this guide and who already attend an HIV clinic will know which blood and other tests are done on a quarterly (three monthly) or annual (yearly) basis. Some people, however, who read the guide will be over 50 and newly diagnosed with HIV infection and therefore may need the explanation of tests and monitoring given below.

Most HIV clinics ask individuals with HIV infection to attend for routine blood and urine tests every three to four months. The tests listed below need to be performed a week or so before visiting your HIV doctor so that any abnormalities

in the results can be discussed at the consultation and the appropriate action taken. Your doctor may perform additional tests on that day, for example, if there is an indication of an unexpected abnormality in the results.

Quarterly blood tests

- HIV viral load
- CD4 count
- Fasting lipids/fats (remember to fast)
- Liver enzymes, kidney function and blood glucose
- Calcium and phosphate levels
- Full blood count
- Tests related to other conditions requiring on-going treatment
- Regular routine blood tests establish whether your medication is doing its job, or whether doses need adjusting due to encroaching effects of ageing on your body.

Other quarterly tests

- **Urine and blood glucose levels:** used to screen for diabetes caused by inadequate amounts of the hormone insulin. This test is done regularly on all HIV-positive patients, whether on medication or not.
- **Lipid/cholesterol profile:** fat in the diet is converted into lipids and transported to various parts of the body, either to be stored or used immediately as an energy source. Diet and exercise play crucial roles in managing lipid levels in the blood and around the body.
- **Hormone levels:** HIV infection may result in a condition known as hypogonadism when the production of testosterone is impaired. Testosterone levels may be checked quarterly if the level is borderline or previously low and treated. If symptoms are present, treatment may be prescribed even with a borderline result and levels will be checked quarterly. Otherwise, testosterone levels will be checked annually.

- **Screening for syphilis and other sexually transmitted infections (STIs):** such as hepatitis B and C should be performed regularly in people who are sexually active. In the absence of symptoms and with no partner change or risk, blood tests for these infections will be performed annually.

A physical examination is usually done by your HIV doctor or nurse at the quarterly appointment, and this should include:

- **Measuring blood pressure:** high blood pressure (hypertension)

increases the risk of cardiovascular disease (CVD) and therefore heart attack and stroke, and also affects the kidneys and the eyes. Your blood pressure should be taken at all routine visits to your doctor. The ideal blood pressure level for an individual will be explained by the health professional doing the check.

- **Examination of the skin:** changes in the skin, for example rashes or new moles or marks, need to be assessed and referral made to the appropriate specialist examination of any relevant body system.

Annual tests

Apart from the regular quarterly checks, an extended annual examination is recommended, including a physical examination and laboratory testing as follows:

Bone mineral testing: calcium, phosphate and vitamin D are all important in maintaining healthy bones and are measured routinely by blood tests. If abnormal, these may be treated by giving supplements.

Bone density scans (DEXA, dual energy X-ray absorptiometry): should be performed every two years in those considered at risk of developing osteoporosis (thinning of the bones) and more regularly, usually annually, in those who have already been diagnosed with an increased risk of fractures.

Other blood tests: annual screening may include tests for syphilis, hepatitis B

and C, and of thyroid function, levels of vitamins and iron, all or any of which may have altered due to HIV infection, as part of the ageing process or as a side effect of medication.

Eye and ear exam: sight and hearing deteriorate at varying individual levels with ageing. HIV infection may impact on both in specific ways and an annual review is recommended. Regular checks at an optician are advisable, and if they find anything abnormal you will be referred to an ophthalmologist.

Vaccinations: vaccination against influenza is recommended annually in late autumn for all HIV-infected individuals and is strongly recommended for HIV-positive adults with additional risk factors such as lung problems (for example asthma), significant heart problems, kidney or liver disease, diabetes, age greater than 65 or when

living in nursing or residential homes. Pneumococcal vaccine (Pneumovax) is recommended in HIV-infected persons

with CD4 counts greater than 200. Ask your HIV doctor for advice on these or any other vaccines.

Men

Prostate tests and checks: the prostate gland enlarges as men get older, causing symptoms such as having to pass urine more frequently, especially at night, and having a weaker stream. There is also an increased risk of prostate cancer as you get older and annual internal checks for prostate enlargement and/or development of nodules is recommended over the age of 45. Tests for prostate specific antigen (PSA) as well as digital rectal examination of the prostate should be performed regularly in older

individuals after consultation with your doctor.

Anal cancer screening: Men, especially those who have sex with other men are at risk of anal cancer. Pre-cancerous changes called anal intraepithelial neoplasia (AIN) can and should be diagnosed and treated to prevent this cancer. Many HIV clinics now offer screening and it is especially important that older men are checked regularly. Ask your doctor how this can be arranged.

Women

Cervical cancer screening: in HIV infection there is a higher risk of developing cervical cancer. Pre-cancerous changes in the cervical tissue known as cervical intraepithelial neoplasia (CIN) are treatable and progression to cervical cancer is usually prevented. It is therefore very important to have regular cervical smears. In the United Kingdom cervical screening is recommended every 3–5 years until the age of 65 years, but annually in women with HIV infection. For women with HIV infection who are over the age of 50 and who are considered low risk (not sexually active and with previously negative smear tests), the recommendations are less clear and therefore all women are advised to discuss this with their HIV doctor.

Mammogram: all women should be encouraged to practice breast awareness – getting to know how their breasts normally look and feel – to help them notice any unusual changes that may be signs of breast cancer. Regular formal breast examination by the woman herself, or by her doctor, is no longer recommended as a useful way of detecting breast abnormalities. Mammograms should be performed on the advice of your doctor and in accordance with national guidelines; for further information visit **www.cancerscreening.nhs.uk/breastscreen/breastawareness**.

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