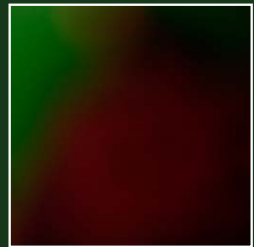
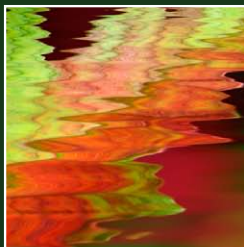
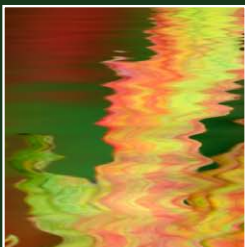


Coming of Age



a guide to ageing well with HIV





www.hivtrislide.com

HIVTRI Slide is a free, online, searchable, downloadable slide library with many presentations regarding HIV and ageing. Access the library at www.hivtrislide.com

Additional information is also available at www.natap.org,
www.aidsmap.com, www.i-base.info

Written and compiled by Dr Mike Youle and Dr Gabrielle Murphy. Additional contributions and editorial comments are included from Salima Adatia, Dr Marta Boffito, Dr Gus Cairns, Will Chegwiddden, Dr Caroline Coffey, Dr Kate Cwynarski, Alastair Duncan, Eustace Eustace, Tom Fernandez, Camilla Hawkins, Dr Peter Kroker, Richard Leigh, Dr Ailsa Lumsden, Helen Montgomery, Dr Devi Nair, David Stainer, Dr Laura Waters
Design by Mark Lawless
Cartoons by Lucy Charlewood, Curious Media
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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'

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Section 1: Introduction



LUCY CHARLEWOOD

THE VINTAGE PEOPLE

Introduction

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

Many individuals who have been 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 medication (ART)** has changed all of this. 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 and complications of its treatment.

The aim of this guide is both to highlight the challenges of ageing with HIV and to establish the best practice by which they may be addressed.

How to use this guide

Those living and ageing with HIV have contributed to this guide, as well as many HIV doctors and other health professionals working in HIV medicine.

References and referrals to other sources of information and relevant organisations have been included, both online and within the printed version. Explanations of medical terms are included throughout the guide and a glossary is provided (**see page 122**). 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 evolving information. As with all printed treatment information please check for up-dates to this edition especially if reading this after December 2011.

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 information, old or new) that we experience with advancing years. This inevitable process progresses with varying speed in different individuals, and for a variety of reasons.

The ageing process can be quantified, at least medically, by measuring parameters such as heart, brain and kidney performance, among others. Most body systems have considerable 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 are 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 much older age. This begs the question – when are people old?

Gerontologists (medical specialists dealing with ageing), researchers and even government agencies all have different definitions of ageing. Previously research into ageing of the general population defined old age as above 75, older age at above 80 and oldest age beyond 85; that is, significantly older than the biblical three score and ten. HIV infection appears to speed up 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. This guide should be relevant to anyone with HIV infection over the age of 50.

Research has shown that there is a link between **genes** made up of **DNA** and lifespan. This link may identify those whose DNA makes them susceptible to dying at a younger age. Genetic material is found in chromosomes and each chromosome has a region at either end known as telomeres. 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 also the body. Telomere length of an individual at a particular age with HIV infection is comparable to that seen in a much older uninfected individual. Since telomere length seems to shorten more rapidly in infected individuals this suggests that HIV hastens the ageing process.

It appears that whatever a person's chronological age (age in years) is, their biological age (age determined by genetic and **environmental factors**) is more important. This infers that it may become possible in the future to prevent or 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.

Similar abnormalities in the immune system are seen in both HIV infection and in ageing; these include a lower **CD4 count**, reduced activity of the thymus gland and shorter telomeres. In addition, another process of ageing known as oxidative stress, in which an excess of **free radicals** compromises the immune system appears to allow HIV to multiply. This implies that HIV infection and the ageing process exacerbate each other.

Long term use of ART has meant that **AIDS**-related conditions develop less commonly when the virus is suppressed and the CD4 count rises. However, the consequent increase in life expectancy has resulted in other HIV related and non-HIV related complications associated with ageing becoming more common. Several studies have concluded that the level of CD4 count when on ART predicts the frequency of non-AIDS related events. The lower the CD4 count, the more likely it is that a person will develop non-AIDS related complications. This is the current rationale for starting ART at higher CD4 counts.

Frailty

The word frailty conjures up a picture of weakness, vulnerability and disability, but also older age. A recent study revealed that frailty increases with age and is greater in women than men, though the reasons for the latter remain unclear. Frailty was also associated with higher rates of long term diseases and disability. It is thought that this is due to a continuing underlying process of inflammation within multiple body systems, as well as poorer general health.

For a definition of frailty as an independent syndrome there needs to be three of the following criteria present:

- Unintentional weight loss
- Self reported exhaustion
- Low physical activity level
- Slowness (measured by the time taken to walk 15 feet)
- Weakness (grip strength)

In relation to older people with HIV infection, studies have shown that a lower CD4 count is associated with frailty, but that no particular association exists with type of ART given. It also revealed that compared to men without HIV infection and of a similar age and ethnic group, those infected with HIV were more likely to have the frailty syndrome. The longer the duration of infection, the greater the prevalence of frailty, so that the frailty prevalence for a 55-year-old man infected with HIV for more than 4 years is similar to that of an uninfected man more than 65 years old.

Further research is needed to establish the exact relationship between frailty and HIV infection. Research is also needed to assess ways to reduce the impact and manage risk factors for frailty. Current advice to delay the onset of frailty is to live a healthier life from as early as possible.

Section 2: Ageing Well



'Age is the most unexpected of all things that happen to a man'

Leon Trotsky (1879–1940), Communist

'You don't stop playing because you are old. You become old because you stop playing'

George Bernard Shaw (1856–1950), Irish playwright

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 factors such as infections, sunlight or accidents, for example).

Therefore to a certain extent, each individual can influence this process by what they do and how they choose to live. Advanced planning should include recognition and acceptance of individual risks and regular review of how 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 highly active antiretroviral therapy (**HAART**), have often worked only sporadically or have retired early. Now that life expectancy has increased, many are considering second careers, going back to train or working either full or part-time. Apart from the obvious financial rewards, this can bring physical, mental and social benefits.

There is robust evidence that ongoing mental and physical activity throughout life has a significant impact in prolonging both quantity and quality of life. 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 reduction in physical, mental and social stimulation or 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 still smoking?

Every three 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. After the appearance of wrinkles, the initial sign of ageing in otherwise healthy individuals is usually deteriorating eyesight; stylish eyewear can make this easier for some. However, becoming forgetful, or needing to use hearing aids or walking aids, can lead to anxiety and/or depression. Dependency 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 often in the past left people dependent for prolonged periods of time, resulting in loss of control of their lives and livelihood. Fortunately, new HIV therapies allow a near normal life for many. Premature ageing now seen in HIV infection is once again changing all this. However, awareness of this process including informed choices made in conjunction with health professionals, and continual review of your lifestyle and health care, can help to maintain 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. This is 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. It is important to ensure that every health professional involved in your care is aware of your HIV status, all medications you are on and the reasons for taking them, results of blood and other investigations and the on-going plan for your care. Electronic records making vital health care information accessible to all health professionals nationally have yet to be securely established. In the meantime, it could be helpful to carry a small booklet summarising important aspects of care and medication. 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

Keeping the mind and body working well: healthy living, healthy adjustments

Coping with the Psychological Issues of Ageing with HIV Infection

Stress may negatively impact on both physical and mental health. It can impair the way we think (**cognitive function**), a problem also seen in ageing, depression and illness in general including HIV infection.

Ageing is increasingly associated with illness and disability, either or both of which may result in a diminished social circle. 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 cause low mood, depression even leading to despair and suicidal thoughts. HIV infection brings with it added stresses of isolation, stigma and bereavement. Relationships, both those that are close and in general, often bear the brunt of a person's stress.

Medications, including ART and those for treatment of hepatitis C (HCV), and 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 is made, or before anti-depressant

medication is commenced. HIV clinics and GP surgeries can make referrals to a suitable support service. In addition, many HIV patient groups outside the NHS have counsellors/psychotherapists available. Nurses and occupational therapists working in the community can integrate treatment to include psychological support, which may 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); cognitive analytical therapy (CAT); relaxation techniques; person-centred, humanist, integrative, psychodynamic and psychoanalytic psychotherapy; relationship counselling; motivational classes or group therapy.

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.

'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 or gum which are available in all pharmacies and do not require a prescription. Studies show that nicotine replacement helps people to stop smoking.

Champix (varenicline): oral tablet 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 people have a lapse and smoke a cigarette, they will find it less enjoyable and are more likely to continue to quit.

Zyban (bupropion): the other oral tablet, Zyban, 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 depressed. The tablets are usually taken before stopping smoking, with a stop smoking date set in the first fortnight of taking them.

Hypnosis: hypnosis aids relaxation and encourages the suggestion that it is possible to stop smoking. It has variable success in helping people stop smoking and there is significant individual variation.

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

Behavioural therapy: this 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 damaging to health and well being and the nicotine content makes it addictive. There does not appear to be a direct effect of tobacco smoking on HIV infection, but as the immune system is compromised, smokers with HIV infection may be more prone to developing non-AIDS related cancers such as lung cancer, have an increased risk of liver cancer if infected with HCV.

HIV INFECTED SMOKERS vs HIV INFECTED NONSMOKERS

- Certain conditions that occur with HIV infection, such as oral thrush, are more common in people with HIV infection who smoke than those who are non smokers
- Smoking related conditions affecting the lungs, such as emphysema and lung cancer, occur more frequently in smokers with HIV infection than in non smokers
- 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 it is known that HIV infection and

ART contribute to the development of these conditions. Therefore, smoking with HIV infection, whether on HIV treatment or not, further increases the risk of such conditions; ageing may increase 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 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 you can refer yourself to these.

Excessive alcohol and recreational drug use can have serious risks to your health and finances

'There are more old wine drinkers than old doctors'

François Rabelais (1495–1553), French physician

Alcohol and Other Drug Use and Misuse

Alcohol

Alcohol is well known to be addictive and consistent excess consumption often results in deterioration of liver and heart function, thinning of the bones and impairment of brain function, especially memory and co-ordination. Many of these faculties deteriorate with both age and HIV infection.

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 may alter mood, interfere 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 cognitive 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.

However, if there is co-infection with hepatitis B (HBV) or HCV or if cholesterol levels are high due to HIV infection or as a side effect of treatment, the advice is to stop drinking alcohol. Alcohol may also interact with medication, preventing the correct processing of the drugs. Inebriation may also interfere

with adherence. Sensible alcohol consumption is recommended.

Cannabis

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 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 even worse.

Other recreational drugs

All recreational drugs such as cocaine, methamphetamine (crystal meth), ecstasy, ketamine and GHB/GBL have mental or 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 a deterioration in mental health including cognitive function and memory loss as well as anxiety and depression which may be suicidal; some of these changes may be irreversible. In an ageing person with HIV infection when these risks are already increased, imprudent drug use may exacerbate this further.

Type of Exercise	Benefits
Yoga, pilates, stretching	Improves flexibility and muscle tone
Aerobic exercise such as jogging, swimming and cycling	Improves heart function, lung function and strengthens bones
Weight/resistance training	Increases muscle size, physical endurance and bone and joint strength

Exercise – What Type and How Much

Everyone knows that regular exercise promotes well-being. This is no different for those ageing or for people with HIV infection. It is important to remember however that as the muscles, joints and bones age, along with the negative effects of HIV infection and ART, they can become more susceptible to injury. Therefore exercise regimes should be tailored to suit the individual and designed to avoid injury.

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 and total cholesterol levels whilst increasing the good cholesterol component known as **HDL**, especially in those with HIV wasting syndrome.

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 of body fat

help reduce the risk of **cardiovascular 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 dietitians can advise about the best foods to eat before and after exercise.

Research has shown that 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.

Be vigilant about face and body changes

'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), Renaissance writer

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 thin and muscle mass is lost. This also happens with HIV infection. However, another syndrome of body shape changes, **lipodystrophy**, can occur in two ways, either as lipoatrophy (fat loss) or as lipohypertrophy (fat gain).

A number of factors are thought to contribute to the syndrome: ART (some drugs are more implicated than others), the CD4 count before treatment, diet, family history (genetics) and smoking. Lipodystrophy also occurs with the ageing process.

Facial lipoatrophy describes loss of the cheek fat pads and in 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.

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 is best to switch to, although this may change over time with new data being published.

The statin group of drugs, used to treat high cholesterol, has been shown in one study to restore some fat to the arms and legs. However, high cholesterol levels in the blood do not necessarily lead to lipodystrophy or *vice versa*.

Exercise has been shown to help somewhat but in most individuals residual fat remains around the waistline and the breasts. Weight training, also called resistance training, may help to restore muscle bulk on the arms and legs.

Lipoatrophy involving the buttocks may make certain sitting positions very uncomfortable and sleeping and bathing may be difficult. Padded buttock underwear and blow-up sitting rings are also available and can 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.

Specialist 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 of low prevalence of HIV infection

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 and generic services within the community. This means facilitating transition from being an inpatient, or outpatient in clinic, to care at home, and establishing networks of communication and support between the hospital and various community teams. Ageing and HIV infection result in complex health needs and it is vital to ensure that HIV infection in the community is not a cause for stigma or isolation.

Home assessments can highlight issues that may not have been obvious previously, such as mobility in the home, and access to a good diet, both of which may affect adherence to medication. In addition, community HIV nurses are ideally placed to work with carers, family, friends and loved ones, as well as other community 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, its treatment and management, but also establishes holistic care.

OCCUPATIONAL THERAPY

Occupational therapists (OTs) provide physical, psychological and social support. They work across all settings including acute hospitals, rehabilitation, 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 have been impaired by physical or psychological factors. OTs may support a change of housing, or provide equipment to maximise ADLs which may include major and/or minor changes in the home, or simply to improve comfort levels for sleeping, bathing, walking, etc.

Anxiety, depression and cognitive decline as a result of HIV infection, treatment and/or ageing can 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 the OT treatment package.

Physiotherapy addresses not only physical but also psychological and social well-being, taking into account current health status

Osteopaths advise that if the structure of the body is improved, function will also improve, symptoms will be alleviated and good health will be restored

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 movement and/or function is abnormal due to injury, disease, ageing or wear and tear.

In particular, physiotherapists treat neuromuscular conditions (where the brain and nervous system have a negative effect on nerves and/or muscles) including peripheral neuropathy, musculoskeletal (muscle, joint, ligaments and tendons) conditions including osteoporosis and the cardiovascular and respiratory systems. Neck and back pain are the two commonest conditions treated by physiotherapists.

Joint and spine mobilisation and/or manipulation and therapeutic exercises including stretching and massage are used to 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 expedite recovery; some physiotherapists can 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, and 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 including:

- Low back pain
- Neck pain
- Arthritis
- Sports injuries
- Restricted mobility
- Occupational ill-health

A variety of mostly gentle, manual techniques are used in osteopathy, 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 but 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 a health professional who deals 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 problems, difficulty in bending to cut nails and the complications of joint deformities that may arise from arthritis and/or be complicated by wearing badly fitting foot wear.

In addition, complications of HIV infection include:

- Nail infections (often due to diabetes)
 - Skin and joint conditions like psoriasis and peripheral neuropathy, in which the feeling in the feet may be reduced thereby making the feet 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 disorders
 - Complications of the above which affect the lower limb, including skin and nail disorders, such as corns, calluses, verrucas and in-growing toenails
- Foot injuries and infections, especially fungal infections
 - Ulceration caused by diabetes, often treated in conjunction with a specialist diabetic nurse or doctor

Podiatrists can provide:

- Regular pedicure for those unable to reach the feet
- Specific instrumentation for painless and effective treatment of foot problems, an important role in maintaining the mobility of elderly and disabled people
- Advise regarding occupational foot health and safety by prescribing orthoses (custom-made shoe inserts) made specifically to reduce an abnormality in the foot, and/or to prevent further damage and make walking more comfortable

Podiatrists work within hospitals and as members of community health and well-being teams.

GUIDE TO GOOD ORAL HYGIENE

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

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 ineffective toothbrush often results in harder brushing to gain the same level of cleanliness, but can result in added damage to the gums

Flossing: it is important to floss correctly; dentists and/or hygienists can advise of the best methods. This is important as one ages since gums recede naturally and flossing may help to delay this process

Toothpaste should contain fluoride: this natural mineral, found in many foods and in all drinking water, strengthens tooth enamel making it more resistant to tooth decay. Plaque is a thin, sticky film of bacteria that constantly forms on your teeth and fluoride reduces the production of plaque. The addition of fluoride to water has been researched for over 50 years and water fluoridation has been proven to reduce decay by 40-60%

Mouthwash: most mouthwashes contain fluoride and can also help to reduce plaque. Some mouthwashes contain alcohol as a preservative and may produce an unpleasant burning sensation on receding gums or if there are mouth ulcers present. Alcohol free mouthwash is available and appears to be just as effective

Visit your dentist and hygienist regularly: it is vitally important to remember that teeth and gums are affected by the ageing process as well as HIV infection. The 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 is more predictable. Untreated HIV infection can give rise to oral symptoms that indicate immune system deterioration and that antiretroviral treatment should be started.

Plaque, made up of bacteria and food debris, causes areas of tooth decay (caries), which lead to cavities, and also gingivitis (gum disease). Cavities should be dealt with as early as possible, as larger ones may lead to the spread of infection 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 lessened immune system resulting from either ageing and/or HIV infection may affect the type and rate of deterioration or disease in the mouth and/or gums. Gingivitis and mouth ulcers are examples of this. Diabetes and excessive alcohol intake may also cause gum disease. It is well recognised that the best way to maintain good oral health is to practice good oral hygiene.

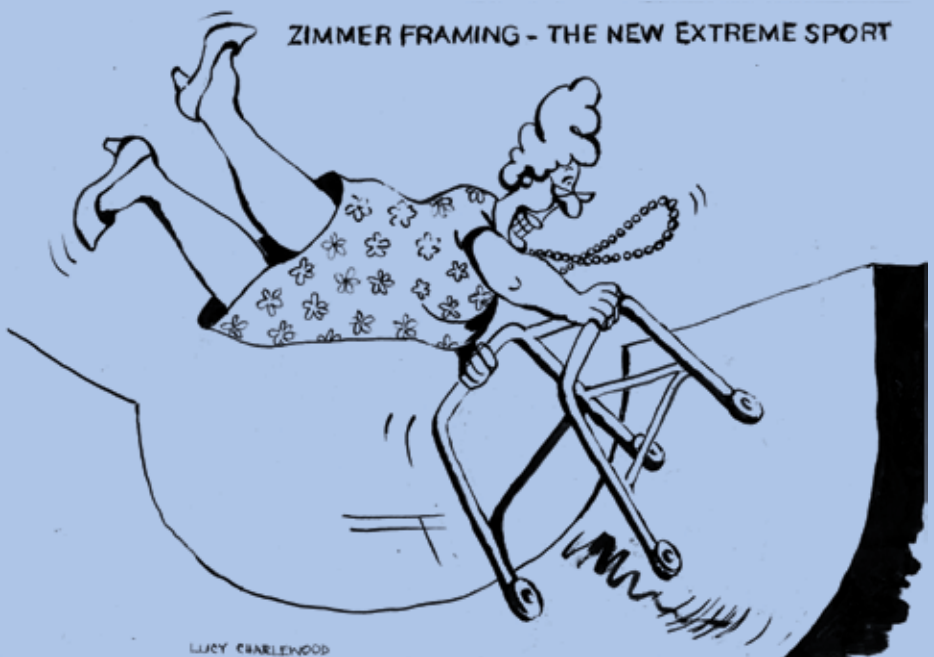
Herpes simplex virus (HSV), which causes cold sores on the lips, may also cause blisters and ulcers in the mouth.

Saliva is extremely important in maintaining oral hygiene and a dry mouth is not only unpleasant but also predisposes to the formation of 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 intolerable, changes to medication may be required.

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.

Section 3: Aspects of Medical Care

ZIMMER FRAMING - THE NEW EXTREME SPORT



**'What shall I do with this absurdity
– O heart, O troubled heart – this
caricature, decrepit age that has
been tied to me
As to a dog's tail?'**

William Butler Yeats (1865–1939), Irish poet

Body Systems

Heart and Circulation: Cardiology

Four out of every five deaths due to cardiovascular disease (CVD) occur in individuals over the age of 65. It is thus a disease associated with ageing and other risk factors, some of which can be altered. CVD can occur at an earlier age in HIV infection and it is therefore very important to attend to these modifiable risk factors

The risk of disease of the heart (cardio) and blood vessels (vascular) increases with age. Cardiovascular disease (CVD) encompasses coronary heart disease (blocked arteries and muscle damage) which can lead to pain (angina) and heart attacks (**myocardial infarction**) and cerebrovascular disease, including cerebrovascular accidents (CVAs), often called strokes, which can be due to bleeding into the brain or damage because of reduced blood supply. Ageing causes arteries to stiffen and harden through a process called **atherosclerosis**. In addition, the valves of the heart may weaken whilst its wall can thicken, both leading to lower efficiency of the organ.

The main risk factors for CVD are listed below

RISK FACTORS FOR CARDIOVASCULAR DISEASE

- Ageing
- Smoking
- Obesity
- High blood pressure
- Diabetes
- Family history of CVD or diabetes
- Male gender
- Ethnicity
- Lack of exercise
- Excess alcohol or other recreational drugs
- HIV infection – as it increases the rate of ageing and may lead to high blood pressure, and/or changes in body shape
- Some antiretroviral medications used to treat HIV infection

THE FOLLOWING ARE MODIFIABLE (CHANGEABLE) RISK FACTORS:

Reduction of blood pressure: 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: increasing weight is a risk factor for CVD and high blood pressure. Ageing causes the proportion of fat in the body to increase and muscle mass to reduce. 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 94cm and in women over 80cm predicts a risk of developing diabetes. HIV disease and ART may also exacerbate body fat changes. A diet that is low in fat, 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 a 4-5 fold increase in the risk of diabetes. Diet and exercise are essential to prevent the need for intervention with yet another medication

(Appendices 1 and 3)

Reduction of cholesterol: (Appendices 1 and 3) ART causes abnormal processing of lipids. The longer a person is on ART the longer the lifetime exposure to this risk factor as that person ages. Choice of ART is therefore very important

Smoking cessation: this is a crucial aspect of reducing risk for CVD. Nicotine replacement therapy or tablets (Zyban or Champix) are available through most doctor's surgeries

Physical activity: (Appendix 3) ageing causes loss of muscle mass and this affects the processing and storage of energy (glucose being one form of stored energy) and also the way medication is processed. Exercise helps to maintain muscle mass and there is robust evidence to show that it 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, cognitive function declines at variable rates with age and alcohol may speed up this process

Heart and Circulation: Cardiology

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 African or 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 and an increased risk of you 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.

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

Checking the levels of fats in your blood helps measuring your risk of heart problems

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

- Total cholesterol under (<) 5 mmol/l
- Total cholesterol < 4 is considered most beneficial
- LDL < 3 mmol/l
- LDL < 2 mmol/l is even more beneficial

It is always best to have these tests done when you are fasted – nothing to eat and only clear fluids (no milk or sugar) for 10 hours before the blood is taken

Lipids and Diet: Biochemistry

Fats (lipids) are essential for life but come in good and bad forms. HIV therapy may increase the levels of bad fats. Regular monitoring of lipid profiles is essential, both on and off therapy

Lipids are absorbed by the digestive system and converted into a form that may be stored and used as an energy source. They 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. There are different types of lipids, referred to as cholesterol and triglycerides.

Triglycerides (TGs; Trigs) are found in the blood stream and abnormally high levels may result in heart disease, inflammation of the pancreas and diabetes.

Cholesterol (Chol) is divided into different types. **High Density lipoprotein (HDL)** binds to remove cholesterol 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 large amounts and is known as bad cholesterol. Abnormally high levels of total cholesterol and LDL are implicated in heart disease.

Blood tests to measure lipid levels include total cholesterol, HDL and TG levels; LDL is calculated by taking the TG value away from the value for total cholesterol. Fasting samples of blood

(nothing should be eaten and only water drunk for the 10 hours before the blood sample is taken) are important, since eating a fatty meal may give an abnormally high level if blood is taken soon after. Blood cholesterol levels increase in both men and women with age. If LDL levels are lowered and HDL levels increased, the risk for cardiovascular disease can be reduced.

ART may cause an increase in lipids (known as hyperlipidaemia) and is therefore considered as an independent risk factor for CVD. Both your HIV doctor and/or cardiologist or lipid doctor will monitor this 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 triglycerides, the most common ones being statins. In HIV infection, care must be taken to choose a statin that has fewer side effects and is less likely to interact with ART, this is one of the reasons that interaction between the different doctors looking after you is imperative.

Lifestyle changes such as stopping smoking, losing weight and regular exercise, treatment of abnormal lipids, moderate alcohol intake and healthy eating can dramatically reduce the risk of developing type 2 diabetes

If HIV therapy is a possible factor in causing it, changing medication may be an option and should be discussed with your HIV doctor

Diabetes

Diabetes occurs when the body is unable to efficiently process the amount of glucose (sugar) in the blood. There are two types of diabetes; the most important type in ageing and HIV is type-2 or maturity-onset diabetes

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

Undiagnosed type-2 diabetes can cause damage to a number of body systems as follows:

- Cardiovascular (heart and blood vessels) system resulting in an increased risk of heart attacks, high blood pressure and stroke
- Damage to blood vessels may lead to peripheral neuropathy and ulcers on the feet and legs
- Damage to, or overgrowth of, blood vessels in the back of the eye 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

Type-2 diabetes is a progressive disease which impacts on many body systems. It is common in the older general population and is easy to diagnose. Early treatment involves changes in your diet and maybe the use of medication to help control your blood sugar level. More severe forms usually require daily injections of insulin.

Named after a German Egyptologist, Georg Ebers, and acquired by him in 1872, the Ebers Papyrus is one of the most famous documents relating to the ancient practice of medicine. Written around 1550 BC, it may relate to earlier texts from the First Dynasty in Egypt (3400 BC)

It mentions a remedy for the treatment of excessive urination (polyuria), 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'

Diabetes

RISKS FOR DEVELOPING TYPE-2 DIABETES

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

Obesity: in men a waist measurement of over 94cm and in women over 80cm make the development of diabetes more likely. Maintaining weight that is ideal for sex, height and age as calculated by the **BMI (Appendix 2)** is important to reduce the risk of type-2 diabetes

HIV medication: predisposes to the development of diabetes and certain drugs are implicated more than others; however the more recently developed medications tend to have a lower risk for this

Family history: those who have a blood relative with type-2 diabetes may be at increased risk of developing the condition themselves

Smoking: as well as raising LDL cholesterol, smoking may also raise blood glucose levels so stopping smoking is vital

Tests for type-2 diabetes

The simplest and quickest method of diagnosing diabetes is to test for glucose in the urine. This is done on a sample of urine by using a slip of paper known as a dipstick which 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**) should be performed at regular intervals to measure the long term glucose level. This reveals if the glucose is properly controlled in between tests and is important to assess the long term exposure to increased glucose levels which causes damage to body systems. Patients may be asked to measure daily glucose levels in urine or blood (by skin prick) to assess whether their medication is having the correct effect.

'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'

Diabetes

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 the genital region and under the breasts
- Slow healing of wounds, including small cuts
- Blurred vision
- Tiredness, which can be significant
- Fluctuations in weight

Development of any of these symptoms should be discussed with your HIV doctor as soon as possible. Once diabetes has developed, all body systems are examined on a regular basis to check for the possible damaging effects of diabetes. For example blood pressure, cholesterol levels and kidney function will be reviewed regularly and annual eye tests will be performed to determine how the disease is progressing.

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

Kidney disease is becoming increasingly common in those ageing with HIV. It is vital to regularly check for this developing in order to prevent any further damage

FUNCTIONS OF THE KIDNEYS

The kidneys perform several vital roles including:

Filtering the blood: They retain all that is good and needed in the blood and excrete fluids unnecessary or toxic to the body. If less than 50% of the total number of the filtering units of the kidney are not functioning then toxins and waste may be retained rather than excreted

Maintaining blood pressure: As the kidneys are one of the main organs that regulate blood pressure, abnormal kidney function may result in high blood pressure. Prolonged high blood pressure in turn 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 people age the amount of vitamin D made in the skin lessens 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

Kidney Function and Waterworks: Nephrology

Multiple factors may cause damage to the kidneys. The most common are drugs (prescribed and illegal), ageing, diabetes and high blood pressure. Excessive and inappropriate use of painkillers, and some antiretroviral medications can cause serious alteration in kidney function. HIV is a risk factor for kidney disease, especially if there is a high viral load, or an individual is of black African descent

Most people have two kidneys but those with only one usually manage to remain well.

Symptoms of impaired kidney function include:

- 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
- Nausea and/or vomiting
- Itchy skin tests
- Muscle cramps
- Decreased appetite
- Difficulty in concentrating

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



Kidney Function and Waterworks: Nephrology

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
- **ART** can cause kidney disease of various types; 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 too high, this may result in diabetic nephropathy (kidney disease) and is usually associated with high blood pressure
- **Ageing** leads to reduced blood supply to the kidney
- **Recreational drug use** damages the kidneys (especially cocaine and crystal meth)
- **Excessive use of pain killers** especially certain antiinflammatory medications
- **Severe bacterial or other infections** especially urinary infections

How is kidney malfunction detected?

In all HIV clinics routine quarterly blood checks include tests for kidney function to specifically look at two chemicals in the blood, **urea and creatinine**, as high levels of these may indicate kidney damage. 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. Routine blood tests can also indicate underlying kidney disease.

Other specialist tests, including an ultrasound scan of your kidneys, may be performed and referral to a nephrologist (kidney doctor) made.

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

Ronald Regan (1911–2004), American 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. 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.

More 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
- An increased need to urinate more frequently both day and night
- A weak and sometimes intermittent stream of urine
- Post-urination dribbling
- A sensation that the bladder has not emptied completely

These symptoms may not occur at the same time, may vary between individuals and can be worsened by drinking large volumes, especially 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 can screen for the disease by a specific blood test called a PSA (prostate specific antigen) and refer you for further tests if necessary.

If you are concerned about your symptoms you should discuss these early on with your doctor.

Ageing, female sex, HIV infection and ART 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: Osteology

Ageing and HIV infection can weaken bones, making them more brittle and more likely to break

Osteoporosis (literally bones with holes) is a condition where the bones become brittle, and since they are less flexible become more susceptible to breaking. Osteopaenia 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, vitamin D and other minerals that bones contain. When they contain lower levels of minerals, their strength and density is decreased. Untreated osteopaenia usually develops into osteoporosis.

HIV infection increases the risk of developing osteonecrosis as do many drugs including large doses or long-term use of steroids, which interfere with the blood supply to the bone.

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 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
- Falls are more common as people get older, often leading to fractures
- Hip and wrist bones are the most commonly fractured bones with ageing

'Dem bones, dem bones, dem dry bones'

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

RISKS FOR DEVELOPING OSTEOPOROSIS

These 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 and ART can be associated with both osteoporosis and osteonecrosis. The reason for this is unclear, however the longer the time 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 osteopaenia and osteoporosis

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

BMI: low **BMI** usually means a person is underweight and therefore there is no in built weight training with daily body movements

Hormone levels: decline with the menopause and early menopause (which occurs in HIV infection) in particular increases risk, as the protective effect of the hormone oestrogen on bone is lost. Men with low testosterone, which is more common in those with HIV infection, are also at increased risk of bone loss

Medications: some treatments, including steroids, may result in decreased bone density

Other conditions: diabetes, liver disease, kidney disease or a family history of these conditions lead to an increased risk of developing osteoporosis

Alcohol: excess alcohol intake may thin the bones and is particularly implicated in osteonecrosis

Bones: Osteology

How are osteoporosis and osteonecrosis detected?

This is done 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. The measure called the T-score is used to calculate how far it is below the peak score in the area of bone being tested.

T-scores related to diagnosis of osteopaenia and osteoporosis

Osteopaenia	T-score between 1.0 and -2.5
Osteoporosis	T-score lower than -2.5

An X-ray or MRI scan can be used to diagnose osteonecrosis and sometimes it is necessary to 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 osteopaenia 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. 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 definitely help to improve bone strength
- **Medication:** your doctor may firstly advise taking calcium and 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
- **Surgery:** may be required, for fractures especially if a joint is involved, hip fractures are the ones most commonly seen

Vitamin D

Vitamin D is essential for good health, it helps the absorption of calcium, necessary for healthy teeth, bones and muscles and is thought to play a role in the prevention of some cancers,



Bones: Osteology

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 produced 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 in 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
- 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, using the P450 pathway with certain ART implicated in the increased frequency of the deficiency.

Symptoms are uncommon and unspecific 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 and liver function.

Treatment is by tablets or, in severe cases, injection. On-going research will hopefully shed further light on the causes and consequences of this deficiency in HIV infected individuals.

Joint disease increases with ageing, due normally 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.

Treatment is essentially similar for HIV and age related joint disease, although it is vital that drug/drug interactions are considered when treatments, especially those that affect the immune system, are used.

If persistent severe tiredness is your only symptom, it should still be reported to your HIV doctor as it can be related to anaemia or occasionally cancer, both of which will benefit from early diagnosis and treatment

Lifestyle changes such as stopping smoking can reduce the risk of developing cancer of the lung and liver

Blood and Cancers: 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 cancers related to ageing, but 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 may be given.

In people with HIV infection, other types of anaemia may be associated with medication such as Septrin and Dapsone which are used for preventing PCP. Depending on the cause and the severity of the anaemia and options for different medication, 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 and may also be more common with increasing age.

Sometimes the first indication of new condition is an abnormality on a 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 nodes may be the first obvious sign of some lymph cancers and these should always be reported to the 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 different to that of an uninfected individual.

Cancer

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 cells that have started to grow out of control. Cancer cells start to go out of control because of mutations in their DNA which occur as a result of both inheritance and as a result of environmental exposure to carcinogens. 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 rises.

Blood and Cancers: Oncology

The immune system plays a fundamental role in protecting the body from cancer cells by killing cells which 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 fight off diseases and consequently the risk of developing cancer increases.

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

AIDS-RELATED CANCERS

- **Kaposi's Sarcoma (KS):** is caused by a virus (HHV8) from the herpes family 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. Epstein-Barr Virus (EBV) is a risk factor for 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 important 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 more cancers that are related to ageing rather than to HIV infection. This happens 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-related cancers.



Blood and Cancers: Oncology

NON-AIDS RELATED 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 lower the risk of developing lung cancer
- **Hodgkin's lymphoma:** is another cancer that occurs mainly in the lymph glands. It can cause night sweating, weight loss and itchy skin
- **Anal cancer:** men who have sex with men have a greater 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
- **Liver cancer:** the risk of liver cancer is very high in people with hepatitis B, hepatitis C and HIV

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

- Infection with other viruses. Being infected with HIV results in a weakened immune system which makes it easier for other viruses to survive in the body and cause mutations in DNA and start the cancer process
- Cancer causing viruses include hepatitis B and C, some types of herpes virus and EBV which typically causes glandular fever
- 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 lung cancer
- If there is a family history of the cancer it is important to look out for symptoms and report anything unusual to your HIV doctor.

In the UK, there are a number of screening programmes for cancer, such as the cervical cytology screening programme. Information about screening will be provided at routine and annual clinic visits. This guide does not include information on treatment for cancer, neither those that are HIV-related nor those more commonly seen with ageing. Treatment of cancer is very specialised and changes in treatment occur regularly. It is vital that if cancer is diagnosed, referral is made immediately to specialist cancer teams for treatment, management and follow-up.

Alcohol consumption should be low or stopped and some recreational drugs should be avoided if you have liver disease

It is important to tell your doctor and other health practitioners about all medication you are taking including supplements, minerals, vitamins and herbs

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 the excessive use of alcohol and recreational drugs and long-term exposure to some ART drugs. It is also thought that HIV infection itself may damage the liver

The liver is an organ that produces bile which helps in the digestion of food. The liver also filters blood from the gut to remove toxic or harmful substances. It processes the digested elements of food, to be stored as energy, vitamins and minerals. The liver also processes many medications and nonprescription drugs. Proteins, such as antibodies for the immune system and clotting factors for the blood are produced in the liver. 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 of the damage done to the liver is reversible. However, as people age this process of repair slows down and continuing damage to the liver will also affect its ability to repair 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 liver 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 does not change with age. There is little research into the ageing processes of the liver and findings vary; however, lower CD4 counts with ageing may contribute to the risk of developing liver disease.

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

RISK FACTORS FOR DEVELOPING LIVER DISEASE

- **Medications** Some drugs cause liver damage of variable extent, most side effects are known and liver function is closely monitored if these agents are prescribed; drug-drug interactions are also important 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 can explain these to you when you buy the medication
- **ART** itself may be toxic to the liver. However, in one study those who delayed starting or who interrupted HIV treatment were also likely to develop liver disease. Nonetheless, it is thought that HIV therapy does not protect against ongoing damage to the liver
- **Hepatitis B and C** and also other rarer hepatitis infections can also 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 drug use** cause liver damage and these can also impair the processing of medications including ART
- Some **vitamins and supplements** in high doses result in liver disease. Taking herbal medicines and high protein shakes 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 infect the liver and cause disease
- **Low CD4 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

Tests to detect liver disease

Liver function tests (LFT) are blood tests that measure specific **enzymes** produced by the liver under normal circumstances. The level of these substances – alanine aminotransferase (ALT), aspartate aminotransferase (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 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 may be done instead of a biopsy.

SYMPTOMS OF LIVER DISEASE

- 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
- Tiredness that cannot be otherwise explained
- Rapid abdominal swelling or weight gain

The presence of antibodies to 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 as shown below

RECOMMENDATIONS FOR VACCINATION AGAINST HEPATITIS A, B AND C

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), which may require treatment. If 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 if treatment is necessary. There is currently no vaccine for HCV

All symptoms, no matter how trivial, should be reported to a health professional

Access to a variety of services may help diagnosis and treatment of symptoms and signs of neurological disorders, whatever the cause

Starting ART earlier may reduce progression of HIV-associated brain disease

Nerves and Brain: Neurology

Both ageing and HIV result in deterioration of nerves, the muscles they supply and the spinal cord and brain function. 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 decreased reaction times. There is significant individual variation in the rate that these changes occur with age but it is exaggerated by HIV infection.

Symptoms of neurological illness may be subtle and therefore easy to miss or ignore. They include dizziness; weakness or loss of strength; pain; pins and needles and numbness, either in the hands and feet or around the mouth or elsewhere. Over-the-counter medications are often used to treat these symptoms, but they should always be reported to your HIV doctor.

Peripheral neuropathy

A condition of the nerves that causes tingling, pins and needles, numbness and pain in the hands and/or the feet and which may spread up the arms and the legs. This 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 requires more specialist tests such as nerve conduction studies (NCS) for an accurate diagnosis. Symptoms may be improved by removing or reducing the cause and specific medication may also help to improve the condition or treat the symptoms.



Nerves and Brain: Neurology

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 with ageing, but can be affected by 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 change (joints, muscle, tendon, bone, nerve, 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 such as osteoporosis, osteoarthritis and rheumatoid arthritis, that are more common with age and HIV infection. Hand function can be assessed by occupational therapists and physiotherapists and aids provided to improve it.

Stroke

Stroke, due either to clots in blood vessels in the brain or bleeding from them, may cause paralysis of one side of the body and may also affect speech, depending on where the clot or bleed occurs in the brain. Improvement

in or even recovery of lost function is possible with the aid of physical and occupational therapy. Lifestyle changes may reduce the risk of stroke.

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

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 depression

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

**'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), Theoretical physicist

Nerves and Brain: Neurology

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. More 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 neurologic 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.

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 slightly less 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 the Activities of Daily Living (ADL)

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 learned tasks such as tying shoe laces is specifically affected. Changes in mood, behaviour and personality may occur as well. It is unclear whether MCI leads to dementia since those diagnosed with MCI may remain stable for many years

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

(Genesis, Chapter 27, Verse 1)

'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

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

The commonest reason 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 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 and ageing. 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 (white part of the eye) can be caused by certain HIV drugs and also by some liver diseases such as hepatitis B and/or hepatitis C infection. Your HIV doctor and co-infection clinic may alter your medication due to this.

There are many other conditions that affect the eye with age but there is yet no evidence to say that HIV directly alters 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. Another two 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 every 1-2 years and more regularly if there is a history or family history of diabetes, high blood pressure or glaucoma.

It is important to discuss problems related to sexual function with your HIV doctor or other health professionals

'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 against a wall.'

Eleanor Roosevelt (1884–1962), American First Lady

Sexual Life and Hormones: Endocrinology

Andropause and menopause cause significant symptoms and effects in some men and women. It is important to distinguish which symptoms are due to HIV infection and which may be due to changing hormone levels

Andropause

This is the term used to describe all the symptoms associated with a low testosterone level, it 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 in those who have had an AIDS diagnosis.

Decreased production of testosterone is matched by 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 which 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, they may not occur together and symptoms 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 increases the risk for cardiovascular disease (CVD). Other studies have suggested that older men with low testosterone levels are also

'It's sad to grow old, but nice to ripen'

Brigitte Bardot (b.1934), French Actress

Symptoms of the menopause include:

- **Insomnia** (difficulty sleeping) and **night sweats** can also occur with HIV infection usually due to immune dysregulation
- **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 medication
- **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
- **Hot flashes** (a sensation of heat usually involving the face and upper body sometimes associated with a fast heart rate which lasts a few minutes) are common in women during the menopause
- **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

Sexual Life and Hormones: Endocrinology

at higher risk of developing cognitive impairment.

Blood tests for testosterone and levels of 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.

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

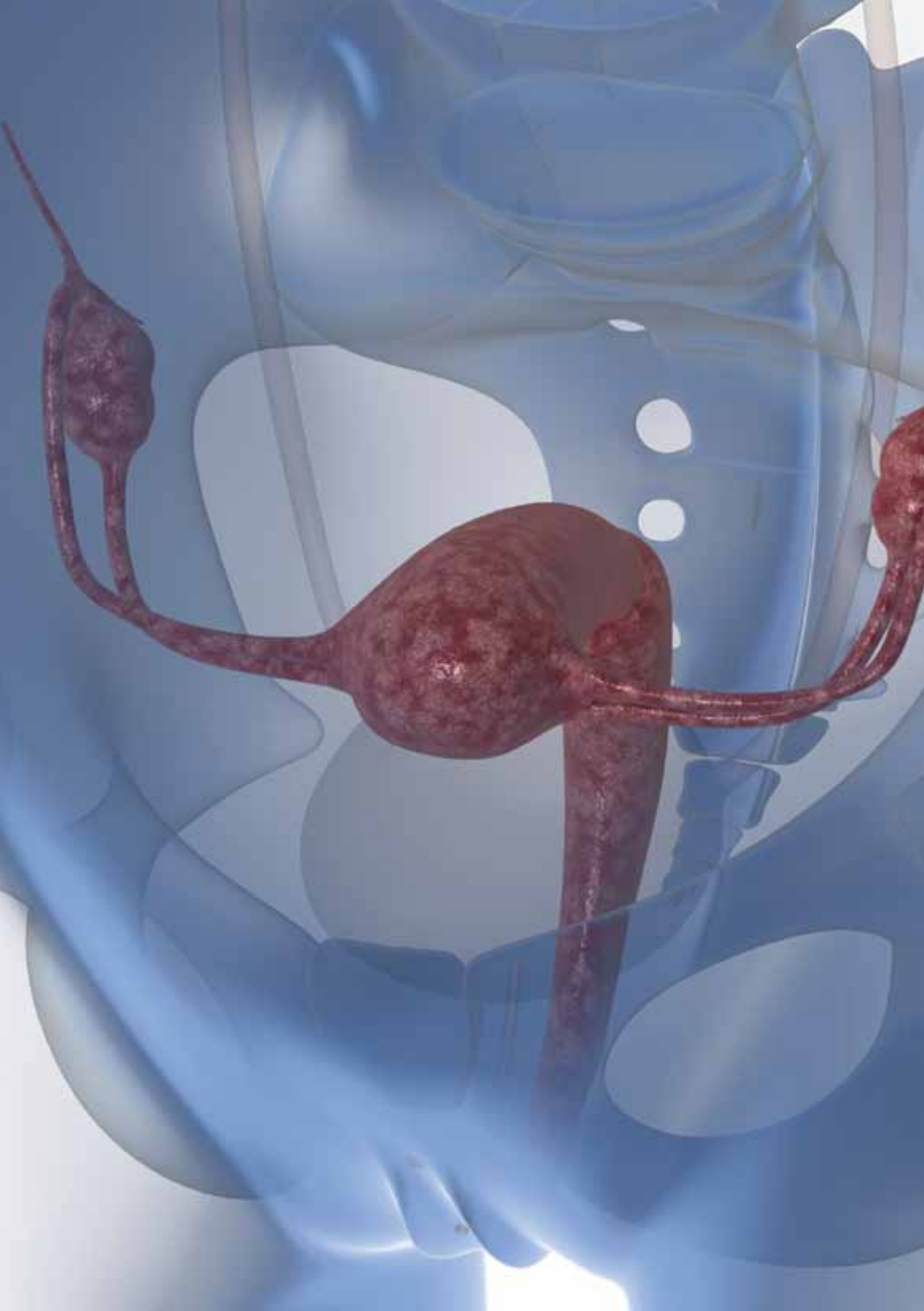
Testosterone replacement comes in different forms, including gel patches and injections. Each method has advantages, disadvantages and side effects, which should be considered when choosing replacement therapy.

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 occurring anywhere between the ages of 40 and 55. Women with HIV infection may experience irregularities in their cycles, without entering the menopause. It is important to discuss with your doctor any changes you are concerned about.

There is a wide individual variation in the symptoms that women experience during menopause, most are treatable, but there are risks and benefits to treatment, especially if you are HIV positive. Hormone replacement therapy (HRT) can reduce hot flushes and the incidence and severity of urinary tract infections.

HRT may have a negative effect on pre-existing liver disease and may affect the level of triglycerides in the blood. It may also be contraindicated when there is a personal or family history of blood clots or abnormal bleeding. A family history of breast cancer should always be discussed with a doctor before starting HRT and screens for sexually transmitted infections are essential with continuing sexual activity.



Sexual Life and Hormones: Endocrinology

Regular breast examination is essential during and after the menopause. If lumps or other abnormalities such as changes in the skin and nipple are found early, the outcome (prognosis) is better in most instances. Getting into the habit of examining the breasts helps a woman know what feels normal and what might be new, such as a lump. Monthly self-examination is recommended and if nothing is found your HIV doctor or GP should perform an annual breast examination. Apart from finding a lump, any changes in the consistency or colour of the skin and/or nipple or any discharge from the nipple should be reported to a doctor immediately.

Mammograms (X-rays of the breast) should be performed regularly, usually every three years. If there is a history of breast cancer in the family, formal breast examination and mammogram will be

undertaken more frequently and genetic testing may be advised.

HIV medication, as with other body parts, may cause changes in the breast, making them larger and lumpier. The lumps are usually benign cysts of inflammation 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 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 gynecomastia and is sometimes caused by HIV medication or 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 of sex does diminish with age to varying degrees in different individuals and particularly in women it may occur suddenly with the menopause. In addition, vaginal dryness, particularly after menopause, may result in painful intercourse.

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 erectile dysfunction 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 both men and women complaining of a decrease in libido.

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

Therapy may include medication, local topical treatment for vaginal dryness, psychosexual counselling, relationship counselling or psychotherapy. Early diagnosis of sexual dysfunction will lead to early treatment so prompt consultation with the relevant health professionals is essential.

'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

Life long 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.

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, become obvious with the emergence of wrinkles in about the 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 include skin cancer, which depends on the history of exposure to toxins including the sun. Some 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 and 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 develops in the deeper layers. Basal cell cancer (BCC) develops at the bottom of the epidermis and is the commonest type of skin cancer. BCC and SCC are called non-melanoma

skin cancer. Skin cancer is usually slow growing, taking years before it is noticed, although it may develop quickly.

RISK FACTORS FOR DEVELOPING SKIN CANCER:

- Long term exposure to the sun
- The risk of BCCs is increased by episodes of sunburn in childhood
- The risk of SCCs is linked to overall sun exposure
- People with fair skin, 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

Everyone needs exposure to sunlight to allow activation of vitamin D in the skin and to maintain normal bone structure and functions. However, it is very

'An archeologist is the best husband any woman can have: the older she gets the more interested he is in her.'

Agatha Christie (1890–1976), crime novelist

NAIL CONDITIONS:

Periungual (next to the nail) warts are due to infection with human papilloma virus (HPV). 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 due to the ongoing exposure of the nailbed to daily wear and tear

In-growing toenails, one of the commonest nail problems with ageing, is caused by careless cutting of the nails, external pressure due to ill-fitting footwear, deformities of the feet and toes, sweating feet, poor foot hygiene and/or excessive skin growth around the nail

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

Skin, Hair and Nails: Dermatology

important to take steps to reduce the risk of skin cancer in later life.

A history of regular exposure to the sun means that skin should be checked regularly. Any skin changes that do not retreat or that increase in size after six weeks should be discussed with a health professional. This includes:

- A sore on the area of the skin exposed to the sun that does not heal or bleeds continually for a month
- Formation of an ulcer with no obvious cause that does not heal itself within a month.

HIV infection affects the skin as well 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 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 does not increase the risk for the skin cancer melanoma. However, when it does occur in HIV infection, melanoma behaves more aggressively.

Hair

Hair loss increases with age and the hair that remains also becomes more brittle. Male pattern balding is common but no more frequent in HIV infection. It is important to distinguish what changes 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** which may cause partial or total hair loss, it is also seen in a patchy form with syphilis infection. Abnormal thyroid function can result in hair loss.

The presence of these conditions will be checked for at your regular appointments and onward referral to the appropriate specialist, usually a dermatologist, made. Iron and thyroid 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 also hair loss.

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 and undetected long standing 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. Nail infections and problems can be dealt with by a podiatrist.

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

Drug Handling and Interactions (Pharmacology)

Ageing affects the ability of the body to process drugs, both prescribed and nonprescribed medications. 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 often results in changes in the way drugs are processed and eliminated from the body. These changes include increased accumulation of fat, reduced water in the cells of the body, a decrease in the size of and the blood flow to the liver and reduction in enzymes (the chemical substances) which break down drugs.

Both medication and non-prescription drugs are broken down in 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. Many of these medications interact with each other and interactions between drugs are likely to increase, since the metabolism of each drug is also affected by ageing. Regular checks with health professionals, especially HIV pharmacists, will ensure correct dosing and reduction of possible side effects; any new side effects should be reported to your doctor immediately.



Drug Handling and Interactions

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 varies from person to person

Distribution: body fat increases with age and some drugs, including protease inhibitors (PIs), which 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 and other agents

Metabolism: the biochemical pathways by which drugs are processed can be affected by ageing as is the rate at which some drugs are cleared from the body. Also the proteins which 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 kidney is affected by the rate at which blood flows through the kidney; this diminishes with age by as much as 50% and can result in an increase in the toxic effects of some drugs

'How old would you be if you didn't know how old you were?'

Satchel Paige (1906–1982), American baseball player

Research into all aspects of ageing with HIV infection is vitally important

Dedicated clinics for the management of other chronic conditions that affect the older person with HIV infection, such as diabetes and CVD, may provide the cornerstone for research endeavors

Research into Ageing

Ageing is an important issue for all, 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 observed ageing effects of HIV infection have opened up many new areas of research

Research into ageing and HIV infection has somewhat lagged behind research into other aspects of HIV infection, as long term survival with the virus was initially in doubt. The advent of ART and other advances in health care 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.

HIV and ageing: research

Ageing 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.

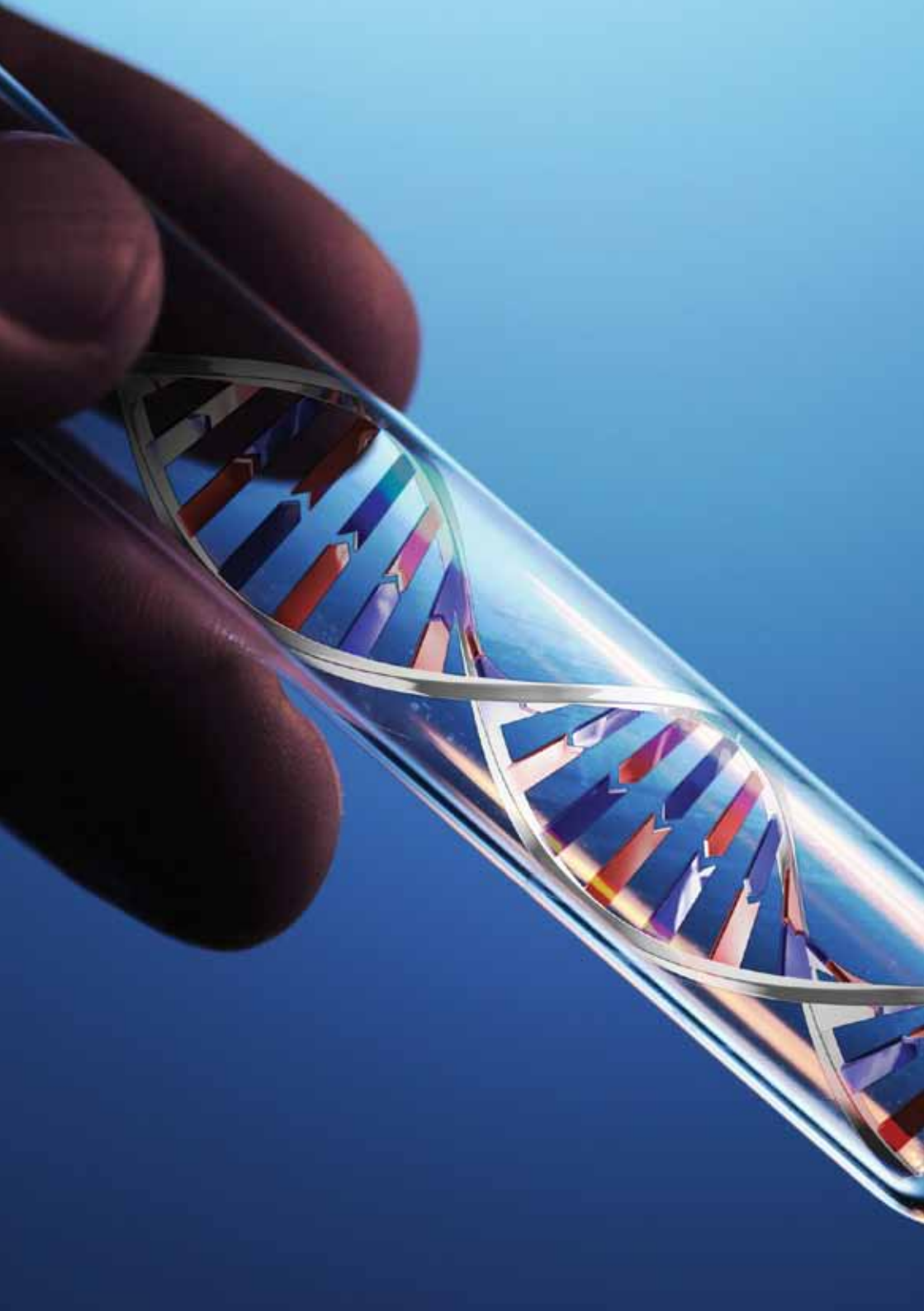
Surveillance in the UK shows that the proportion of people aged over 50 accessing HIV care increased from 1 in 10 in 1999 to 1 in 6 in 2008. It has been estimated that by 2015, 50% of people with HIV infection in the US will be 50 and older. At least part of the increase in HIV in the over 50s is driven 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? Why is testing not targeted effectively in these age groups?

Research into Ageing

- Exactly how much extra risk do HIV and HAART confer? Both HAART and HIV 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 HAART, 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 malignancies/cancers? Which? When? How? It is well accepted that anal cancer is increased in people with HIV infection but there are few data regarding progression of early abnormalities, cost-effectiveness of screening and treatment and which methods are best
- 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? Liver metabolism of drugs changes with age. If trials of lower doses of ARVs in older people prove efficacy could this strategy reduce toxicity? Are there any unforeseen toxicities from ARVs with increasing age?
- What about investigational therapies for general ageing? Although work on these is in 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 HIV infection. 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 infection 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



Research into Ageing

- What is the best way to investigate, prevent and manage other medical conditions? Should HIV infection 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 infection 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 needs to be considered as a possible diagnosis by those providing care for older people

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

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

Controversial Issues in 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 require further research but will need planning and development of new health policies to help with the impact on health 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 will rise 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 HAART fewer people 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 has expanded to include other specialist services such as cardiology, kidney, cancer and bone specialists. Even within HIV outpatient clinics demand is changing. This is due to ever

evolving treatments, their side effects, the possible necessity for dose changes 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 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. This can be improved by starting therapy, however further research is needed. It is crucial that there is increased surveillance in detecting new HIV infection in the older

'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'

Controversial Issues in Ageing

population so that appropriate therapy is commenced 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 health care 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 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 compromised care. The activist movements seen in the early days of HIV infection may need to rise again, now with grey hair, to address the challenges of HIV and ageing.

Further Information: Web Links and Resources

Accommodation for Older Adults

Accommodation Council: maintains a nationwide database of housing for older people and provides guidance to help enquirers choose suitable accommodation

0800 377 7070

www.housingcare.org

or www.eac.org.uk

Age Concern

For further details of your local Age Concern in England, call the Age Concern Information Line

0800 169 6565

www.ageuk.org.uk

For publications, resources and events for and about older lesbian, gay and bisexual people

www.ageconcern.org.uk/openingdoors

Centre for Policy on Ageing

An independent charity promoting the interests of older people

020 7553 6500

www.cpa.org.uk

Alzheimer's Society Lesbian and Gay Network

Can be contacted through the Alzheimer's Society national helpline

0845 300 0336

www.alzheimers.org.uk

Support service for lesbians or gay men in support roles

01843 220932 or 01865 847471

www.alzheimers.org.uk/gaycarers

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

www.bhiva.org

Royal National Institute for the Blind (RNIB)

Supports blind and partially sighted people

030 3123 9999

www.rnib.org.uk

Careers and Learning

www.direct.gov.uk
www.reed.co.uk/learningcentre
www.aging.unc.edu

Carers

Princess Royal Trust for carers: runs a network of carer centres around the country

0844 800 4361
www.carers.org

Counselling

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

UK Council for Psychotherapy
www.psychotherapy.org.uk

British Psychoanalytic Council
www.pschoanalytic-council.org

Relationship Advice
www.relate.org.uk

Royal National Institute for Deaf People

Information on hearing loss and service for the hard of hearing
www.rnid.org.uk

Dentists

www.dentalhealth.org.uk
and www.nidcr.nih.gov

EACS

www.europeanidsclinicalociety.org

Exercise

The YMCA runs Positive Health programmes for people with HIV infection
020 7712 7120

Food

The British Heart Foundation
www.bhf.org.uk

The Food Standards Agency

www.food.gov.uk
www.eatwell.gov.uk

General Health

NHS Live Well
NHS Direct 0845 46 47
www.heartuk.org.uk
www.bhf.org.uk

GP Services

www.forum.org.uk

HIV Life Insurance

www.lifebroker.co.uk

Further Information: Web Links and Resources

Information about HIV and ageing

www.natap.org
www.i-base.info
www.aidsmap.com

Living Well Programme

For positive self management of HIV

020 3137 3373
www.livingwelluk.com

Mortgages

www.hivmortgages.com

Osteopathy

General Osteopathic Council

020 7357 6655
www.osteopathy.org.uk

Pensions Advice

Pension Service: for details of state pensions, including forecasts and how to claim your pension

0845 60 60 265
www.thepensionservice.gov.uk

Podiatry

Society of Chiropodists & Podiatrists

020 7234 8620
www.feetforlife.org.uk

Services for Older Lesbians, Gay Men and Bisexuals

www.casweb.org/polari
www.stonewall.org.uk
www.ageconcern.org.uk/openingdoors

Smoking

www.quitline.org.uk

Most hospitals and GP surgeries have in-house smoking cessation services; ask at the reception

NHS Stop Smoking Helpline
0800 022 4332
www.smokefree.nhs.uk

Wills and Power of Attorney

Office of the Public Guardian (OPG): for information and forms for Lasting Powers of Attorney

0845 330 2900
www.publicguardian.gov.uk



LUCY CHARLEWOOD

IT'S CHEAPER THAN GETTING A FACELIFT

Appendices

Appendix 1

Diet and Healthy Eating

A healthy diet may prevent disease, or reduce disease progression. Examples include cardiovascular disease and risk of heart attack and stroke; increased risk of fractures; neurocognitive impairment; and increased risk of cancer.

TO REDUCE CARDIOVASCULAR RISK:

- Eat oily fish two or three 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 the plate
- Exercise to reduce fat around the middle and keep a healthy weight

TO REDUCE 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 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
- 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 RISK OF COGNITIVE DECLINE:

- Eat oily fish two or three 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 RISK OF CANCER:

- A healthy diet has been shown to reduce risk for some cancers. General advice includes:
 - a. Cut down on saturated fat
 - b. Eat more dietary fibre
 - c. Aim to eat at least five portions of fruit and vegetables daily. Antioxidants and vitamins are found in brightly coloured fruits and vegetables
 - d. Avoid eating too much smoked or processed meat
 - e. Limit salty, pickled or brined foods
- Drink sensibly as drinking too much alcohol is associated with certain cancers, so keep within recommended limits

Appendix 2

Body Mass Index



Appendix 3

Diet and Exercise, Top Tips

Tips for eating oily fish:

- Oily fish provide omega-3 oils which help reduce cholesterol and triglyceride levels and also keep blood vessels supple and flexible
- Oily fish are those with darker or coloured flesh: sardines, mackerel, pilchards, salmon, tuna, swordfish, kippers, herrings, pilchards, sprats, tilapia, red snapper
- This can be fresh, frozen or canned
- White fish contain only small amounts of omega-3s

Tips for reducing saturated fat in the diet:

- Cut the fat off meat, choose extra lean cuts of red meat, or instead eat more chicken or fish
- Take the skin off chicken before cooking
- Grill or steam as much as possible
- Use a low fat margarine instead of butter
- Instead of full-fat milk or yogurt use lower fat versions
- Try reduced fat cheeses
- Instead of cakes, pastries, crisps and biscuits try healthier snacks such as fruit, crackers, popcorn, walnuts or seeds

- Palm oil and coconut oil contain high levels of saturated fat, so instead use corn, sunflower or olive oils
- Use water instead of oil for cooking as much as possible. Use a teaspoon of palm oil or coconut for taste by adding it towards the end of cooking if required

Tips for reducing salt in the diet:

- Most of the salt eaten is already in food especially ready made meals, soups and cereals. It is possible to be eating excess amounts of salt without realising it
- Too much salt may increase blood pressure thereby increasing the risk of developing heart disease and stroke significantly
- 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)

Diet and Exercise, Top Tips

Foods to eat to increase fibre in the diet:

- Peas, beans and lentils
- Oats
- Fruits and vegetables
- Wholemeal or higher fibre bread, pasta and rice
- Breakfast cereals such as Bran Flakes, Special K, or Shredded Wheat

Tips for increasing vitamin D levels:

- Sunlight stimulates the making of vitamin D which lies under the skin
- In the UK the sun is strong enough to make vitamin D from April to September between 10am and 3pm
- 20 minutes in the sun is needed before applying sunscreen – longer if your skin is darker
- Sunbathing is not required. Too much exposure to the sun leads to an increased risk of skin cancer
- Vitamin D is stored in the liver all year, so adequate exposure to the sun from April to September should be sufficient

Dietary tips to maintain or increase bone strength:

- Eat reduced-fat dairy products every day
- Non-dairy sources of calcium include calcium-enriched soya milk and tofu
- Leafy vegetables such as spinach, kale and spring greens also provide vitamin D
- Oily fish are good sources of both vitamin D and calcium
- Vitamin D is found in liver, eggs, fortified margarine and some breakfast cereals
- Eat protein at each meal, ideally three times a day
- Protein is found in meat, chicken, fish, eggs, beans and lentils, dairy foods, nuts, tofu and other soya products

Recommended limits for sensible drinking:

- For men, up to 21 units of alcohol per week
- 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 have 2 consecutive alcohol-free days each week

Exercise tips to reduce cardiovascular risk:

- Aim to exercise vigorously for 30 minutes at least three times per week
- 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

Exercise tips for improving bone health:

- Aim to exercise every day
- Weight-bearing exercise strengthens lower 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 good for other aspects of health
- Check with a doctor or a physiotherapist that your exercise plan is safe

Tips for eating and drinking with exercise:

Dehydration may reduce the maximum benefit of exercise.

To remain adequately hydrated:

- Drink before becoming thirsty
- Drink before starting to exercise
- Keep fluids to hand to 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 or squash is adequate

Diet and Exercise, Top Tips

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 or prevent 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 other medication. The manufacture and sale of vitamins, minerals and supplements is not regulated, making it difficult to control the amounts taken, to monitor effects or, 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 dietitian can advise on dietary interactions with vitamins, minerals and supplements.

Supplements, vitamins, minerals and associated interactions

St Johns Wort

This is often prescribed as an alternative to antidepressants. It has been shown to interact with several HIV medications and if you are on ART you must not take St Johns Wort as well.

Echinacea

May be associated with increased levels of tumour necrosis factor alpha (TNF-alpha), a substance produced by the immune system to kill unhealthy cells. However, high levels of TNF-alpha have been linked to the progression of HIV disease

Sutherlandia

This is a herb of African origin which may interact with some HIV medication and should be avoided

Garlic

In the raw form excessive garlic may interact with some HIV medication

Excess vitamin A

In excess, has been associated with liver and bone damage

Excess vitamin B6

Large doses have been associated with peripheral neuropathy developing

Excess vitamin C

In large quantities may cause kidney stones and interact with HIV medication

Chinese herbs

May affect processing of drugs by the liver

Excess selenium and zinc

May affect processing of drugs by the liver

Grapefruit juice

May impact negatively on the immune system in high doses. It interferes with processing of statins, medication taken to reduce cholesterol and should not be taken at the same time

Glossary of Terms

Activities of Daily Living (ADL):

health professionals routinely refer to the ability or inability to perform ADL, such as washing, toileting, dressing, cooking, shopping and cleaning, as a measurement of the functional status of a person. This measurement is useful for assessing the elderly and those with chronic illness, to evaluate what type of health care services an individual may need

AIDS (Acquired Immune Deficiency Syndrome):

the condition in which infections and cancers occur as a result of damage to the immune system 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 preventable by highly active antiretroviral medication (HAART)

Alopecia: loss of hair from skin areas 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 or to prevent immune deterioration

Atherosclerosis: thickening of the inner wall of the 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 by weight in kilograms, divided by height in metres multiplied by itself. The normal range is between 20 and 25 and indicates levels of obesity. See Appendix 2

Candida infection (thrush): infection with the fungus *Candida albicans* usually occurs in the mouth, 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

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

CD4 count: this 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 vessel) – sometimes known as coronary artery disease (CAD). Cerebro- (brain) vascular (blood vessel) disease refers to the condition that may result in a stroke or dementia

Cirrhosis: develops as a result of persistent damage to the 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: memory and concentration span, along with thoughts, feelings and perceptions. Cognitive Behaviour Therapy 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

Glossary of Terms

Environmental factors: climate, altitude and toxins that might be present in the environment 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 the 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: a unit of the material of heredity which is found in DNA

HAART: highly active antiretroviral therapy describes the use of combinations of anti-HIV drugs from different classes, each class attacking HIV in a different way

Haemoglobin: the oxygen carrying capacity 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 a three month period, and is a useful test in monitoring diabetes

Heart attack: also known as myocardial infarction (MI) or 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 any muscle damage is done

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

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

Lipodystrophy: this refers to the redistribution of fat which 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's 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 scan: magnetic resonance imaging. MRI is a diagnostic technique that provides a three dimensional image of organs, muscles and bones within the body without using X-rays or other radiation

Myocardial infarction: see Heart attack

Glossary of Terms

Neurocognitive impairment: this refers to the impairment of any of the assorted mental processes that underpin our rational thinking (thoughts, feelings and perception). Minor cognitive impairment is a stage between the normal cognitive decline of aging and the more severe issues resulting in Alzheimer's disease. The disorder affects many areas of thought and action such as language, attention, reasoning, judgment, reading and writing. The most common initial symptom is forgetting where keys are left

PCP: *Pneumocystis carinii* 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, that is, the hands and the feet, and may spread upwards, and is due to damage to the nerves. It has multiple causes which 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: a type of lipid (fat) and the main type to be stored as fat in the body and 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 old people due to deterioration in the function of the pancreas

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 kidney for excretion. If the kidneys fail, these substances are not excreted and the blood levels of urea and creatinine rise, and the level indicates 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 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 tests every three to four months. The table below outlines the tests that 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.

Routine blood tests

HIV viral load

CD4 count

Fasting lipids/fats (remember to fast)

Liver and kidney function and blood glucose

Bone function, including vitamin D levels

Urine dipstick test

Red and white blood cells

Tests related to other conditions requiring ongoing 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 the body systems.

Regular Tests

Urine and/or blood glucose level: this is a screen for diabetes caused by inadequate amounts of or defective performance 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 may include:

Blood pressure: high blood pressure (hypertension) increases the risk of cardiovascular disease (CVD) and therefore heart attack and stroke, and also affects the kidney and the eyes. The 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 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: for example, if shingles or the symptoms of peripheral neuropathy have been a recent problem, your HIV doctor will assess whether any further treatment or onward referral is required

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 and density testing: calcium, phosphate and vitamin D are all important in maintaining healthy bones and are measured routinely by blood tests and if abnormal may be treated by giving supplements. Bones become more brittle with ageing and some anti-retroviral medications may cause bone mineral loss. 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 testing may include hepatitis B and C, 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

Men: the prostate gland enlarges as men get older. There is also an increased risk of prostate cancer 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), which may be raised in prostate cancer, should also be performed annually in older individuals

Women: 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. Breast examination should also be carried out regularly by a woman herself and annually by her HIV doctor. However there is no known association between breast cancer and HIV infection

Regular Tests

Breast examination: breast should be checked visually and by hand. Looking in a mirror, any changes in the consistency and colour of the skin and nipple, and shape and size of the breast should be reported immediately. The arm on the side of the breast to be examined should be folded behind the head, and using the hand of the other arm, circular movements should cover the breast tissue, nipple and armpit. Dividing the breast up into quadrants sometimes helps so as not to miss any areas. Regular breast examination allows a woman to become familiar with what is normal; if you are unsure about this ask your doctor for advice

Mammogram: this should be performed on the advice of your doctor and in accordance with guidelines

Vaccinations: vaccination against influenza is recommended 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 is recommended in HIV infected persons with CD4 counts greater than 200. Ask your HIV doctor for advice on these or any other vaccines

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