

Coming of Age



This guide is brought to you by The HIV Training and Resource Initiative

a guide to ageing well with HIV

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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 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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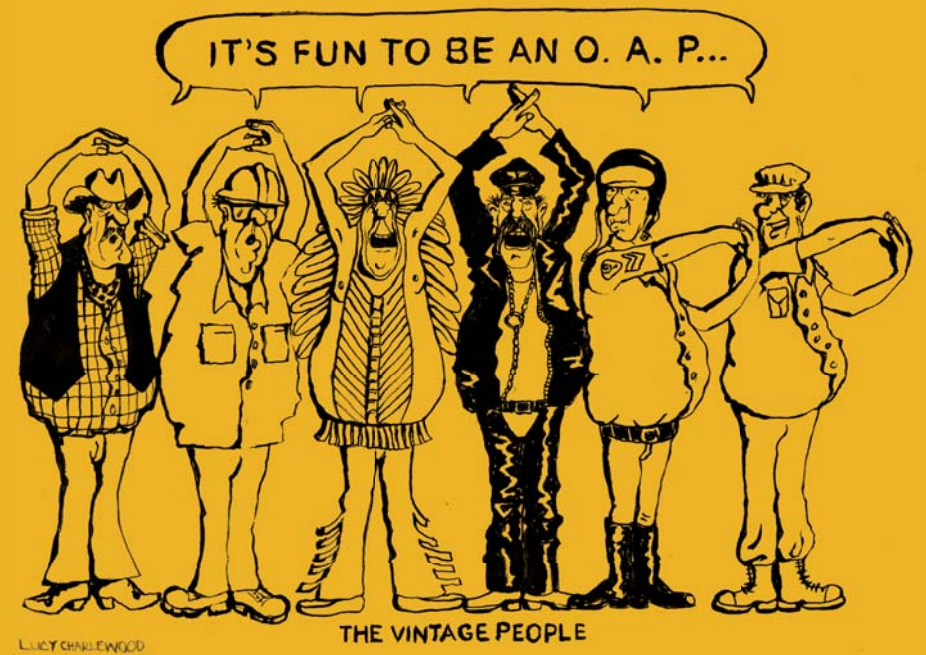
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Section 1: Introduction



Introduction

Welcome to the first edition of the HIVTRI guide for people over 50 with HIV infection.

Many who have been living with HIV, some for more than 20 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 are facing 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 has changed all 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/or its treatment.

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

How to use this guide

A number of individuals living and ageing with HIV infection have contributed to this guide, as well as 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/or in the glossary (**see p. 122**). Words that are in the glossary are printed in italics ***like this***.

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 November 2010.

Sentinel Issues

What is ageing?

Ageing is the term used to describe the decline of physical ability (for example deterioration in hearing, sight and mobility), appearance (such as wrinkles and loss of hair) and mental agility (efficiency of retaining and processing information, old or new) that is experienced with advancing years. This inevitable process progresses with varying speed in different individuals, and for different reasons.

Medical assessment can quantify ageing by measuring parameters such as heart, brain and kidney performance among others. Most body systems have a considerable 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 which is the powerhouse of the immune system already shows signs of ageing before 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 leaves the question – when are people old?

Gerontologists (medical specialists dealing with ageing), scientists and even government agencies have different criteria and definitions according to their own requirements. Previously research into ageing of the general population defined old age as 75, older age at 80 and oldest age at 85 and above. That is, significantly older than the biblical three score and ten. HIV infection appears to speed up the ageing process and monitoring and intervention might need to begin at a much earlier age. This guide should be relevant to anyone with HIV infection over 50 years old.

Recent research has shown that there is a link between the genes (**DNA/genetic material**) and human lifespan. This link may identify those whose DNA makes them susceptible to dying young. Genetic material is found in chromosomes and each chromosome has a protective cap at either end known as a telomere. In normal ageing these telomeres shorten, the protective cap is lost leading to illness and death. Telomere length in HIV infection is comparable to those of a much older non infected individual. This suggests that HIV hastens the ageing process.

Studies suggest that whatever a person's chronological age (age in years) is, the biological age (age determined by genetic and environmental factors) is more important. This research 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 **antiretroviral therapy (ART)** or not is still not well understood. HIV infection causes the telomere length to shorten much faster and this may predispose HIV infected individuals to age prematurely.

Similar abnormalities in the immune system are seen in both HIV infection and in ageing; these include a reduced **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 would imply that HIV infection and the ageing process exacerbate each other.

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

	Relevant section in this guide
Cardiovascular disease, including high blood pressure	Section 3 – 41 page
Diabetes	Section 3 – 47 page
Osteoporosis	Section 3 – 59page
Liver disease	Section 3 – 71 page
Kidney disease	Section 3 – 53 page
Peripheral neuropathy	Section 3 – 75 page
Cognitive decline	Section 3 – 79 page

HIV and Ageing – continued

develop non-AIDS related complications. This is the current rationale for starting HIV medication at higher CD4 counts.

In summary, despite adequate suppression of HIV, the immune system continues to be defective in similar ways to those in the ageing process. Also, the consequences of ageing occur earlier in HIV infection than in non-HIV infected individuals. Therefore, more attention needs to be paid to age related symptomatology and a range of medical specialties will be required to manage an increasingly complex disease spectrum. Both the European AIDS Clinical Society (EACS) and the British HIV Association (BHIVA) have incorporated the management of older people with HIV infection into their latest guidelines **(see further Information p 108-110)**.

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) **(see p. 77)**

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 55-year-old men infected with HIV for more than 4 years is similar to that of uninfected men 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’

Diary in exile, 1959
Leon Trotsky 1879 – 1940

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

Ageing Rock Star

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 portion of **longevity** is genetically determined and the rest of it depends on lifestyle and **environmental factors**. Therefore to a certain extent, each person can influence this process. Advanced planning should include recognition and acceptance of individual risks and regular reinforcement of lifestyle improvement.

Exercise programmes, dietary changes, cessation of smoking and appropriate social activity are all part of forward planning. Anxiety related to ageing may also be reduced by securing financial arrangements and pensions, making a will and even deciding on funeral arrangements. Regular clinic visits are also vital to assess for any non-**AIDS** illnesses associated with ageing and HIV infection, to maximise the benefit from early diagnosis and intervention.

Working Versus Retiring

The era of steady employment after school or college, working until retirement age and living out a dotage is almost gone. People with HIV infection, especially those first 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 (**see Further Information pp 108-110**). 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 (**see pp.19, 25**).

WELLNESS CHECKLIST

Daily

1. Can I exercise more today?
2. Have I bought the right food?
3. Drink less alcohol today
4. Am I doing the right things to sleep properly?
5. Am I doing something new today?
6. Stop smoking

Weekly

1. Stop smoking
2. What is my weight?
3. Have I planned an active weekend?
4. Am I doing something nice with a friend

Every three months

1. What is my blood pressure?
2. What are my routine blood
3. Have I had my check up?
4. Have I stopped smoking?
5. Are my finances in order?
6. How has my mood been over the last couple of 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 first sign of ageing in otherwise healthy individuals is usually deteriorating eyesight (**see p. 81**); stylish eyewear has made this a bit easier for some. However, becoming forgetful, or the necessity for hearing aids or walking aids, can lead to anxiety and/or depression (**see p. 19**). 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. (**see pp. 29-33**).

HIV infection has often 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 the scene yet. Awareness of this process including informed choices made in conjunction with health professionals, and continual review of suitable lifestyle and health care, can help to maintain

quality of life and potentially improve life expectancy. It may be useful to devise a checklist to follow, to improve lifestyle and remain in control (**see opposite page**).

HIV Clinics, hospital outpatient department (OPD) and GP surgeries are essential resources for people wanting to remain in control of their health. This is even more relevant as older age encroaches and new conditions (either HIV associated or not) develop. Individual medical histories are different and some are more complex than others. It is important to ensure that every health professional involved in care is aware of HIV status, all medications and the reasons for taking them, results of investigations and the on-going care plan (**see Further Information pp. 108-110**). 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. (This is available as the HIV Patient booklet on the HIV iBase website www.i-base.info)

**‘Worry gives a small thing
a big shadow’**

Swedish Proverb

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

Coping with Psychological Issues of Ageing with HIV Infection

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

Ageing is universally 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 increases with age. That coupled with loss of previous lifestyle and occupation may separately or together cause despair, low mood and depression. HIV infection may bring with it added stresses of isolation, stigma, and bereavement **(see Further Information pp. 108-110)**. Relationships, both close and in general, are often the first to bear the brunt of stress.

Medications, including **ART**, those for treatment of Hepatitis C, and many recreational drugs including alcohol may result in anxiety, depression and mental illness, such as paranoia or **psychosis**. These possible causes need to be identified and treated before referral to counselling, psychology or psychiatry is made, or before anti-depressant

medication is commenced. HIV clinics and GP surgeries may make referrals to a suitable service. In addition, many HIV patient support services outside the NHS have counsellors/psychotherapists. Nurses and occupational therapists working in the community can integrate treatment to include psychological support, which may also be delivered in the home **(see pp. 29-35)**.

Psychological interventions in general help individuals to negotiate challenges. These include counselling, psychology or psychiatry. 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.

Different people will respond to different approaches, techniques and theories. Evidence shows that the degree of trust achieved between therapist and client, and the therapist's interpersonal skills, are the most significant predictors of success rather than the specific theory behind the therapy **(see Further Information pp. 108-110)**.

‘When a lovely flame dies, Smoke gets in your eyes’

Otto Harbach, American songwriter 1873-1963

AIDS TO STOP SMOKING:

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 is no 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 and increasing the risk of liver cancer if infected with Hepatitis C.

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 nonsmokers
- Smoking related conditions affecting the lungs, such as emphysema and lung cancer, occur more frequently in smokers with HIV infection than in nonsmokers
- The AIDS defining pneumonia, **PCP**, is three times more likely to occur in smokers with HIV infection than in nonsmokers
- In the general population there is very good evidence that smoking tobacco increases the risk of heart disease, stroke and high blood

pressure (**see pp. 41-43**) and it is known that HIV infection and **ART** contribute to the development of these conditions. Therefore, smoking with HIV infection, whether on treatment or not, further increases the risk of such conditions. Ageing may increase the risk yet again

Stopping smoking is difficult as it is both a physical and a psychological addiction. The psychological aspect of the addiction is complicated. Nicotine replacement in various forms may help stopping smoking. In many cases specific medication is necessary and sometimes a more holistic approach may be required, such as group or individual therapy. There is evidence to show that replacement medication supplemented by group and/or individual therapy is more successful. Methods used to help smoking cessation are given on the **opposite page**

The NHS, has multiple Smoking Cessation programmes based in hospitals, GP surgeries and in the community, and self referral is appropriate (**See Further Information pp.108-110**).

Excess alcohol and recreational drug use can have serious health risks

Effects are physical and psychological

Alcohol and Other Drug Use and Misuse

Alcohol

Alcohol is addictive and consistent excess consumption may result 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 age as well and this process may be hastened yet again with HIV infection.

Deaths related to alcohol consumption are second only to those caused by tobacco in the UK. Alcohol, in moderate amounts, usually enhances relaxation and social integration. However, in excess it may alter mood, interfere with physical co-ordination and cause vomiting and diarrhoea, as well as acute alcohol poisoning, a medical emergency.

Research has shown that persistent excess alcohol consumption may reduce the efficiency of the immune system, leading to lower **CD4** counts. It will also impact on **cognitive function** in the long term. While there is no evidence to say that there are direct effects of moderate alcohol intake on either ageing or HIV infection, both can result in a weakened immune system.

However, if there is co-infection with hepatitis B or C 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 (**see Appendix 3, p 117**).

Cannabis

It is well documented that cannabis has medicinal properties. It has been used by people with HIV infection to relieve pain, especially that of peripheral neuropathy, and to reduce anxiety and insomnia. However, it remains an illegal substance.

It is the effects of long term use that are of most concern, including heart disease, diseases of the lung such as asthma and bronchitis, and significant mental illness including depression and psychosis. Ageing and HIV infection both impact on the lungs and heart and prolonged cannabis use may make these even worse.

Other recreational drugs

All other recreational drugs such as cocaine, methamphetamine (crystal meth), ecstasy, ketamine, ghb and poppers 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 many of these drugs may lead to deterioration in mental health including cognitive function and memory. 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.

Exercise – What Type and How Much

Type of exercise	Good effect
Yoga, Pilates	Improves flexibility, and muscle tone
Aerobic exercise such as jogging and swimming and cycling	Improved heart function, lung function and strengthens bones
Weight/resistance training	Muscle strength, bone strength and endurance

Everyone knows that exercise promotes well-being. This is no different for the ageing body and mind or for people with HIV infection. It is important to remember however that as the muscles and bones degenerate with ageing, and with the effects of HIV infection and **ART**, they become more susceptible to injury. Therefore exercise regimes should be tailored to suit the individual and to avoid injury.

The benefits of exercise include improving mood, boosting the immune system and of course the looking good factor. In addition, there is robust evidence that exercising lowers blood pressure and total cholesterol and increases the good cholesterol component known as **HDL**, especially in those with HIV wasting syndrome who may have particularly low levels of HDL.

Body shape changes that are a result of HIV infection and/or medication can be improved with exercise, including reducing the fat that accumulates around the waist. Such fat accumulation may predispose to diabetes (**see pp. 47-51**). Both the lowering of cholesterol and reduction of body fat accumulation

reduce the risk of cardiovascular disease (**see pp. 41-43**).

When planning and beginning an exercise programme, advice from a professional such as a personal trainer, physiotherapist or osteopath (**see p. 33**) can be very helpful. It is important to plan an exercise regime around diet and meal times and dietitians can advise about the best foods to eat before and after exercise (**see Appendix 3 p. 117**).

Research has shown that regular low-level exercise is an excellent way to begin a programme and to maintain a healthy 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 unfit. Weight training, also known as resistance training, is an excellent 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 prices for people with HIV infection (**see Further Information pp. 108-110**).

Be vigilant about face and body changes

Early action may reduce the progress of lipodystrophy and changes in medication and lifestyle will promote the feel good and look good factors

Cosmetic Support

Lipodystrophy means redistribution of fat in the body that may occur in two ways, either lipo-atrophy (fat-loss) or lipo-hypertrophy (fat gain).

A single cause for lipodystrophy has not been identified, but a number of factors are thought to contribute to the process: **ART**, (some medication is more implicated than others), the **CD4** count before treatment, diet, family history and cigarette smoking. Lipodystrophy also occurs with the ageing process and other factors may exaggerate the effect.

Facial lipoatrophy describes loss of fat pads in the cheeks and in the temples. This may be devastating for some since it is now seen as a hallmark of HIV infection, and may be the object of stigma and loss of self esteem.

Lipoatrophy also affects the body and can mimic the fat loss encountered with ageing on the arms, the legs and the 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, so-called manboobs or moobs, and middle age spread.

Evidence about which drugs are better or worse for lipodystrophy is constantly emerging and the HIV doctor will advise on the most effective switch. This may change with time and new evidence.

Medication which has been shown in one study to restore fat to the arms and legs is the statin group used to treat high cholesterol. However, high cholesterol levels in the blood do not mean that lipodystrophy will automatically occur in the body and vice versa.

Exercise has been shown to help but in most individuals there is always a residual amount of fat around the waistline and the breasts. Weight training, also called resistance training, may help to restore muscle bulk in the arms and the legs.

Lipoatrophy involving the buttocks may make certain 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 (**see p. 31**).

Cosmetic treatments for facial lipoatrophy not related to HIV infection have been used for sometime. These treatments, referred to as skin fillers, are now being successfully used in patients with HIV infection, through HIV clinics and are also available in the private medical sector (**see Further Information pp. 108-110**).

‘The test of any civilization is the measure of consideration and care which it gives to its members’

Variously attributed

Access to Care

Appropriate medical care can prolong the lives of people with HIV infection and prevent unnecessary complications. Such complications may not only be hazardous to the individual, they also affect quality of life and have a cost implication for the health service.

Increasing knowledge about the impact of long term HIV infection and ART has shown that the illness and the medication affects an increasing number of body systems and access to other specialists is crucial.

Cost implications of increased access to such care at a time of cost constraint, coupled with the possible disability of ageing, mean that increasing awareness of services available in the community becomes increasingly important.

This includes developing a good relationship with the GP, with full disclosure about HIV status. Appropriate communication between services is then more likely.

Models of care are changing. The development of polyclinics, which are expanded GP surgeries, will include a range of specialist clinics such as:

- **Dental care: (see p. 37)** this has been notoriously difficult for those with HIV infection. All patients, whether HIV status is known and/or disclosed or not, should be treated as possibly infected
- **Gynaecology: (see pp. 85-87)** regular smear tests have generally been undertaken in HIV clinics, due to the increased rate of cancer of the cervix seen in women with HIV infection. This service may devolve to the GP practice
- **Cardiovascular risk: (see pp. 42-43)** care for people at risk of this is already provided in many GP surgeries due to the high prevalence in the general population
- **Diabetes: (see pp. 47-51)** specialist diabetes nurses monitor and support adherence to treatment and levels of sugar (glucose) in the blood by seeing people with diabetes in GP surgeries or at home

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

Particularly in areas of low prevalence for HIV infection, specialist HIV nurses are a vital link

OT advice on conserving energy and coping with fatigue is important as a strategy to improve life

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 assessment highlights 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. Not only will this serve to increase knowledge about HIV infection, its treatment and management, but it establishes holistic care.

OCCUPATIONAL THERAPY

An occupational therapist (OT) provides physical, psychological and social support. OTs work in all settings including acute hospitals, rehabilitation, social service teams, in the community and as part of hospital at home. An OT will assess the ability to perform activities of daily living (**ADL**) and establish the extent to which these have been impaired by physical or psychological factors. They may support a change of housing, or provide equipment to maximise ADL which may include major and/or minor changes in the home, or simply to improve comfort levels for sleeping and walking.

Anxiety, depression and cognitive decline as a result of HIV infection, treatment and/or ageing may also be assessed by an OT. Practical measures such as diaries and memory aids and advice on how to prioritise and to pace ADL 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 the current health status

Osteopaths suggest that if the structure of the body is improved, the 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, whether movement and function are abnormal due to injury, disease, ageing or wear and tear.

In particular physiotherapists treat neuromuscular conditions (where the brain and nervous system have an effect on muscles) including **peripheral neuropathy (see pp. 75-76)**, musculoskeletal (muscle, joint, ligaments and tendons) conditions including osteoporosis (**see pp. 59-61**) and the cardiovascular and respiratory systems (**see pp. 41-43**). Neck pain and back pain are two of the 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 been out of use. Hot/cold packs, electrical muscle stimulation, ultrasound and hydrotherapy may also be used to expedite recovery. Specifically trained physiotherapists may also use acupuncture.

OSTEOPATHY

Osteopathy is used to prevent, diagnose, and treat joint, muscle and ligament conditions and to help the body to heal itself. As a holistic treatment, assessment for osteopathy includes medical and lifestyle history, personal circumstances, 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

(see Further Information pp 108-110)

‘Drop, drop, slow tears, And bathe those beauteous feet, Which brought from Heaven The news and Prince of Peace’

Poetical Miscellanies

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 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, skin and joint conditions like psoriasis and **peripheral neuropathy (see pp. 75-76)**, in which the feeling in the feet may be reduced thereby making the feet more vulnerable to injury.

Other conditions treated by podiatrists include:

- 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 in conjunction with a specialist diabetic nurse or doctor **(see pp. 47,51)**
- Regular pedicure for those unable to reach the feet

Podiatrists have specific instrumentation for painless and effective treatment and play an important role in maintaining the mobility of many elderly and disabled people.

They may also advise on occupational foot health and safety by prescribing orthoses. Orthoses are custom-made shoe inserts made specifically to reduce an abnormality in the foot, and to prevent further damage and make walking more comfortable.

Podiatrists work within hospitals and as valuable members of the community team

(See further Information pp. 108-110).

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 effectively 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 with risk of added damage to the gums

Flossing: it is important to floss correctly, otherwise damage can ensue. Dentists and/or hygienists will advise. This is very important as one gets older as the gums naturally recede and flossing may help to delay this process

Toothpaste should contain fluoride: fluoride is a natural mineral that is found in many foods and in all drinking water. Fluoride strengthens the 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 also help to reduce plaque. Some mouthwashes contain alcohol as a preservative and may have an unpleasant burning sensation especially with receding gums or any ulceration. Alcohol free mouthwash is available and is thought to be just as effective

Visit the dentist and hygienist regularly: finally it is vitally important to remember that gums and teeth 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 of which is smiling

Mouth and Dental Hygiene

Dental problems are common at any age. Wear and tear on the teeth and gums over the years is more predictable. Untreated HIV infection gives rise to oral symptoms that usually indicate that treatment should be started, and such discussion is outside the remit of this booklet

(See Further Information pp 108-110).

Plaque, made up of bacteria and food debris, causes areas of tooth decay, called **caries**, then cavities, and gingivitis (gum disease). A vulnerable 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 **(see pp. 47-51, p. 23, p. 118)** may also cause gum disease.

Herpes simplex virus, which causes cold sores on the lips, may extend to involve the lining of the mouth and the gums. The teeth however are not affected directly by HIV infection or **ART**. Currently there is insufficient evidence to confirm whether the bone structure that supports the teeth is affected by osteoporosis **(see pp. 59-61).**

Saliva is very important in maintaining oral hygiene and a dry mouth predisposes to the formation of tooth decay. Medication such as those for HIV infection, blood pressure, depression and Hepatitis B and C may all cause a dry mouth. If this is troublesome, artificial saliva may help, but if not tolerable, a change in medication may be required. Cavities should be dealt with as early as possible, as larger cavities may lead to the spread of infection and possible loss of teeth.

All procedures to correct disease or disorder in teeth or gums including the replacement of teeth are safe to perform in people with HIV infection whatever their age. All procedures should be discussed fully with the dentist and hygienist. It is well recognised that the best way to maintain good oral health is to practice good oral hygiene **(see opposite page).**

Section 3: Aspects of Medical Care



**‘What shall I do with this
absurdity – O heart, O
trouble heart – this caricature,
Decrepit age that has been
tied to me
As to a dog’s tail?’**

The Tower (1928)
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 people over the age of 65. It is therefore a disease of ageing and is associated with risk factors, some of which can be changed. CVD occurs at an earlier age in HIV infection and it is therefore very important to attend to the risk factors.

The risk of disease of the heart (cardio) and blood vessels (-vascular) increases with age. **Cardiovascular disease (CVD)** includes coronary heart disease (**angina and heart attack**) and cerebrovascular disease/**stroke** (affecting blood vessels in the brain). Ageing causes the arteries to stiffen and harden by a process called **atherosclerosis** and the walls of the heart may thicken making it a less efficient pump. Risk factors for CVD are given below.

RISK FACTORS FOR CARDIOVASCULAR DISEASE

- Ageing
- Smoking
- Obesity
- High blood pressure
- Diabetes
- Family history of CVD or diabetes
- Gender
- Ethnicity
- Exercise pattern
- Excess alcohol consumption
- HIV infection – as it increases the rate of ageing and may lead to high blood pressure, and changes in body shape
- Antiretroviral medications used to treat HIV infection

THE FOLLOWING ARE MODIFIABLE (CHANGEABLE) RISK FACTORS:

Reduction of blood pressure: this is essential for reducing the risk of stroke with ageing. 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 the 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. Diet that is low in fat, moderate in carbohydrate and protein is essential as is regular exercise (see pp. 24-25)

Diabetes: ageing is associated with a disturbance in the way glucose is processed and a 4-5 fold increase in the prevalence of diabetes. Diet and exercise are essential to prevent the need for intervention with yet another medication (see pp. 24-25, Appendix 1 and 3 pp. 114, 117)

Reduction of cholesterol: (see pp. 24-25, Appendix 1 and 3 pp. 114, 117) **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: (see pp. 20-21) 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: (see Appendix 3 p.117, pp. 24-25) 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 (see pp. 95-97). 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: (see p. 118) 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 and therefore 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 – continued

Some risk factors can be modified or changed, others cannot. Ageing, gender, ethnicity and family history cannot be altered. 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 very sharp rise in the risk of CVD for women. People of African or South Asian descent have a higher risk than white people. If an immediate family member has had angina, heart attacks or strokes, there may be a genetic link and increased risk of developing CVD.

Cardiovascular Risk Assessment (CVR) is used to calculate the short and long term risk for developing CVD and one of several scoring systems available (**Framingham, Q risk**) is used. It is acknowledged that these scoring systems are not perfect but they are being improved all the time as medical expertise and technology improves. There may be a dedicated lipid clinic within the HIV Unit or a specialist nurse may be assigned to the Unit to perform the CVR assessment.

FACTORS THAT ARE USED TO MAKE A CVR ASSESSMENT INCLUDE:

Modifiable factors

- Smoking history
- Total cholesterol and **HDL** (good cholesterol) levels
- Blood pressure
- **Body Mass Index (BMI)** using weight and height measurements is also calculated and will indicate whether a person is underweight, overweight or even in the obese category (see Appendix 2, p. 116.). Guidelines suggest that a BMI of less than 25 with no central obesity is ideal
- Waist measurements, because fat accumulation around the waist (central obesity) is a risk factor for CVD and specifically for diabetes

Non-modifiable factors

- Age
- Gender
- Presence/family history of diabetes

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

Guidelines suggest that blood levels to reduce the risk of CVD should be as follows:

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

Lipids are fats that have been absorbed by the digestive system and converted into a form that may be stored and used as an energy source. Lipids are essential for a healthy life and are involved in the maintenance of muscles and bones and are also necessary for normal brain function. There are different types of lipids, referred to as cholesterol and triglycerides.

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

Cholesterol is divided into different types. **High Density Lipoprotein (HDL)** binds to remove cholesterol from the body and is therefore known as good cholesterol.

Low density Lipoprotein (LDL) carries the cholesterol around the body and 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 are important for these measurements 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 (**see opposite page**), the risk for cardiovascular disease (**CVD**) is reduced.

ART may cause an increase in lipids (known as hyperlipidaemia) and is therefore considered as an independent risk factor for CVD. Both the HIV doctor and the lipid doctor will monitor this regularly and advise on the necessary changes to lifestyle and medication. Studies have shown that using cholesterol lowering drugs in the general ageing population without HIV infection is beneficial. There is a range of medications used to treat the different types of abnormal cholesterol, the most common ones being statins. In HIV infection, care is taken to choose a statin that has fewer side effects and is less likely to interact with ART.

Lifestyle changes such as not smoking, appropriate weight reduction and exercise, control of cholesterol, moderate alcohol intake and healthy eating can help reduce the risk of developing type 2 diabetes

If HIV medication is implicated, changing medication may be an option to be discussed with the HIV doctor

Diabetes

Diabetes occurs when the body is unable to efficiently process the amount of glucose (sugar) in the blood. There are several types of diabetes but the most important type in HIV infection and ageing is type 2

Type 2 diabetes occurs with increasing frequency with age and is 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**). Many of the symptoms of diabetes are caused by abnormal levels of glucose in the blood.

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

- Cardiovascular (heart and blood vessels) system – increased risk of heart attacks, high blood pressure and stroke
- Damage to blood vessels – may lead to peripheral neuropathy and ulcers to the feet and legs
- Damage to blood vessels in the eye – may affect the membrane at the back of the eye and result in visual impairment and blindness
- Reduced blood flow to the penis – may result in erectile dysfunction and impotence
- Damage to the kidney – may result in kidney failure

Type 2 diabetes is a progressive disease which impacts many body systems. Although reducing risk factors and correct medical management may help, it is possible that insulin injections may be required to treat abnormal glucose levels.

German Egyptologist Georg Ebers acquired his famous papyrus in 1872. Named for him, the Ebers Papyrus is one of the most famous documents relating to the ancient practice of medicine. Written about 1550 BC, abundant evidence suggests that it was copied from a series of books many centuries older. One passage dates from the First Dynasty (circa 3400 BC)

The first reference to diabetes mellitus is attributed to the Ebers Papyrus, which mentions remedies for the treatment of excessive urination (polyuria):

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 – continued

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 for risk of diabetes

Obesity: in men a waist measurement of over 94cm and in women over 80cm predicts that development of diabetes is more likely. Maintaining weight that is ideal for sex, height and age as calculated by the **BMI (Appendix 2 p.116)** 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 the development of diabetes

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

Smoking: as well as raising **LDL** cholesterol (**see p.45**), smoking may also raise blood glucose levels and all attempts at smoking cessation should be made (**see p. 21**)

Tests for type 2 diabetes

The simplest and quickest method of diagnosing diabetes is to measure for glucose in the urine. This is done on a sample of urine with a slip of paper known as a dipstick, which checks for abnormal levels of various compounds in the urine including glucose. Abnormal urine tests can be confirmed by blood test which will measure the exact amount of glucose in the blood. In addition, once on treatment, whether this is by diet or by medication, a further specialised blood test may be performed to measure

the long term glucose level (**HbA1C**). This shows whether the glucose is properly controlled in between tests. This is important as it is long term exposure to increased glucose levels which causes damage to other body systems. When treatment is started, it may be necessary to measure glucose levels in urine or blood (by skin prick) to assess on a daily basis whether the 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 good

I do feel as if I just get on top of one thing and then the other goes haywire

What has kept me going is that I feel that I get holistic care in one place’

Diabetes – continued

SYMPTOMS OF TYPE 2 DIABETES

- Excessive thirst (polydipsia) and frequent and increased urination (polyuria)
- Increased fungal infections such as candida (**thrush**) on the skin, in damp areas such as the genital region and under the breasts
- Slow healing of wounds, including small cuts
- Blurred vision
- Tiredness, which may be significant
- Fluctuations in weight

Development of any of these symptoms should be discussed with the 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, as well as other tests.

Kidney Function and Waterworks – Nephrology

Multiple factors may cause damage to the kidneys. The most common are certain medicines, ageing, diabetes and high blood pressure. Excessive and inappropriate use of painkillers and some antiretroviral medications may cause serious alteration in kidney function. HIV is a risk factor for kidney disease, especially if there is a high viral load

FUNCTIONS OF THE KIDNEYS

The kidneys perform several vital functions including:

Filtering the blood by retaining all that is good and needed by the body and excreting as urine all that is 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 kidney is one of the main organs that regulate blood pressure, so abnormal kidney function may result in high blood pressure and prolonged high blood pressure in turn may damage the kidneys. High blood pressure (**see pp. 41-43**) is associated with ageing as 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 (**see pp. 47-51**)

Vitamin D is made in the skin and is converted into its active form in the kidney. 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 (**see p. 63**)

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

Most people have two kidneys and those with only one usually manage to remain well. This is partly due to the amount of reserve function in the kidneys, which means that it may take up to 50% loss in kidney function before a change is seen through abnormal blood or urine tests.

Symptoms of impaired kidney function include:

- Increased or decreased passing of urine
- Nausea and/or vomiting
- Itchy skin
- Muscle cramps
- Decreased appetite
- Difficulty in concentrating
- Any symptoms should be reported to the HIV doctor immediately.



Kidney Function and Waterworks – Nephrology continued

Risk factors for developing kidney disease include:

- If **high blood pressure** occurs with HIV infection of itself or associated with ageing. HIV infection may directly cause kidney disease and this is called HIV-associated nephropathy (HIVAN), which affects black African patients and is rare
- **ART:** this may be complicated if there are other risk factors for developing kidney disease, or if other medications that are being taken are a risk factor for kidney disease. However, kidney complications on ART are not common and usually occur within three to six months of starting therapy
- **Diabetes:** if the glucose levels in the blood are too high, this may cause diabetic nephropathy (kidney disease) which may also be associated with high blood pressure
- **Ageing:** this causes reduced blood supply to the kidney, which may be as a result of high blood pressure
- **Recreational drug use:** this may be toxic to the kidneys
- **Excessive use of certain pain killers:** especially certain anti-inflammatory medication
- **Severe bacterial infections**

How is kidney malfunction detected?

In all HIV clinics routine quarterly blood checks include tests for kidney function. The quickest and easiest test is a urine check, which can detect changes early. A dipstick urine test can reveal abnormal levels of protein, blood, a pigment called bilirubin, white blood cells, glucose and **ketones** (indications of diabetes). It is a screening test that will indicate which further tests need to be carried out to establish the cause of any abnormal results. Routine blood tests will also indicate kidney disease by specifically looking at two chemicals in the blood, **urea and creatinine**, as high levels indicate kidney damage.

Other specialist tests may be performed and referral to the nephrologist (kidney doctor) should be made.

‘The spirit of self help is the root of all genuine growth in the individual’

Self Help (1859), Chapter One

The Prostate Gland

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 cancer or HIV infection.

More significant enlargement may 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, cold weather and any drug that causes increased urination, such as some blood pressure medication, or that causes decreased urination, allowing urine to stagnate in the bladder, and increase the chance of urinary tract infections or stones in the bladder.

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

Prostate cancer may have similar symptoms and the health professional will perform specific tests including physical examination, **PSA** and ultrasound scan. If you are concerned about your symptoms you should discuss these early on with the doctor.

Ageing, HIV infection and ART are risk factors for osteoporosis

Weight-bearing exercise and lifestyle changes are vital to prevent and treat osteoporosis

Bones – Osteology

Ageing and HIV infection can have a negative effect on bones, making them more brittle and more likely to break

Osteoporosis (bone-porous, with holes) is a condition in which the bones become brittle and because they are less flexible they are more susceptible to breaking. Osteopenia is the term used to describe the thinning of bones before full osteoporosis develops. Osteonecrosis, also known as avascular necrosis, is the condition of bone death. This occurs most frequently at the top of the thigh bone, near the hip joint.

Causes of osteoporosis/osteopenia and osteonecrosis

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 bones contain lower levels of minerals, the strength and density is decreased. Untreated osteopenia will develop into osteoporosis.

HIV infection increases the risk of developing osteonecrosis as do many drugs including heavy or long-term use of steroids. Both medications interfere with the blood supply to the bone.

What are the symptoms and complications?

- In the early stages of osteoporosis, symptoms may not be noticeable
- Pain is the most common symptom, in places where the bones are more vulnerable to pressure such as the back and the hip
- Pain around the hip is the most common 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 also more common as people get older
- Hips and wrist bones are the most commonly fractured bones with ageing

RISKS FOR DEVELOPING OSTEOPOROSIS

Risks for developing osteoporosis include:

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

HIV infection: the virus and **ART** are associated with both osteoporosis and osteonecrosis. The reason for this is not clear, however the longer the time a person is infected with HIV the more the risk of osteoporosis and osteonecrosis increases

Ethnicity: people of Asian and White ethnicity are more at risk than other people

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 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: reduce with menopause (**see p. 83**) 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 at increased risk of bone loss

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

Other conditions: Type 1 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 – continued

How are osteoporosis and osteonecrosis detected?

Osteopaenia and osteoporosis can be detected by measuring bone density in various sites of the body, usually at the hip and the spine. The bone density test is called a DXA (dual energy X-ray absorptiometry) scan and indicates loss of mineral in the bones. The bone mineral density of the bone is compared with the peak density of a normal 30 year old of the same gender. A measure called the T-score is used to calculate how far below the peak score the bone being tested lies, as shown.

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 is used to diagnose osteonecrosis. Sometimes it is necessary to perform a bone biopsy, when a small sample of bone is removed for analysis either under local or general anaesthetic.

Prevention and treatment options for osteoporosis

The optimum prevention is to build up the peak bone density by 35 years of age. However, if either osteopaenia or osteoporosis has already developed it is possible to prevent further deterioration and reduce the risk of fractures by:

Exercise: weight-bearing exercise may help to retain minerals in the bone. Activities such as hiking, swimming, running and Pilates may improve bone density and lower the risk for developing bone disease

Lifestyle changes: apart from exercise, it is crucial to remove risk factors such as smoking and to moderate alcohol and caffeine intake. Diet containing calcium, phosphate and Vitamin D will help to improve bone strength (**see Appendix 3 p. 118**)

Medication: a specialist doctor may advise firstly taking calcium and Vitamin D supplements, but if the fracture risk is significantly increased, drugs called bisphosphonates may be prescribed

Steroids: should be avoided if possible

Surgery: may be required, especially if a joint is damaged. This is most commonly the hip joint in osteonecrosis



Bones – Osteology – continued Vitamin D

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

Vitamin D is made in the skin with the help of sunlight – this is the main source of vitamin D and it needs bare skin and direct sunlight (not through a window). Darker skins will need more sun to make the same amount of vitamin D. It is also found in certain foods

(see Appendix 3 p. 118)

Causes of vitamin D deficiency include:

- Ageing
- HIV infection and some treatments
- Low exposure to sunlight
- Poor diet.

Research has shown that almost a third of HIV-positive patients have vitamin D deficiency. Vitamin D is processed in the body in the same way as many HIV medications, using the P450 pathway with certain ART implicated in the increased frequency of the deficiency. However darker skin is the most frequent risk factor for vitamin D deficiency.

Symptoms are not common, or may be vague such as tiredness and aches. More specific symptoms include muscle cramps or pains or muscle weakness and bone pain, most often in the back, hips and/or legs.

Vitamin D is tested on a regular basis **(see back pages)** in addition to blood tests for calcium and phosphate and liver function, which also may show changes linked to a low level of vitamin D. Extra tests may be needed if the cause of the deficiency is in doubt, or if there are other vitamin or mineral deficiencies.

Treatment is by tablet or, in severe cases, injection. Overdose may result in toxicity. Ongoing research will hopefully shed further light on the causes and consequences of this deficiency

If tiredness is the only symptom, it should still be reported to the HIV doctor as it could be related to anaemia or cancer, both of which will benefit from early treatment

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

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 abnormalities

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. 75% 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 a noninfected person.

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.

'Ageing is not for sissies'

Katherine Hepburn, 1907-2003
American Actor

Blood and Cancers – Haematology and Oncology continued

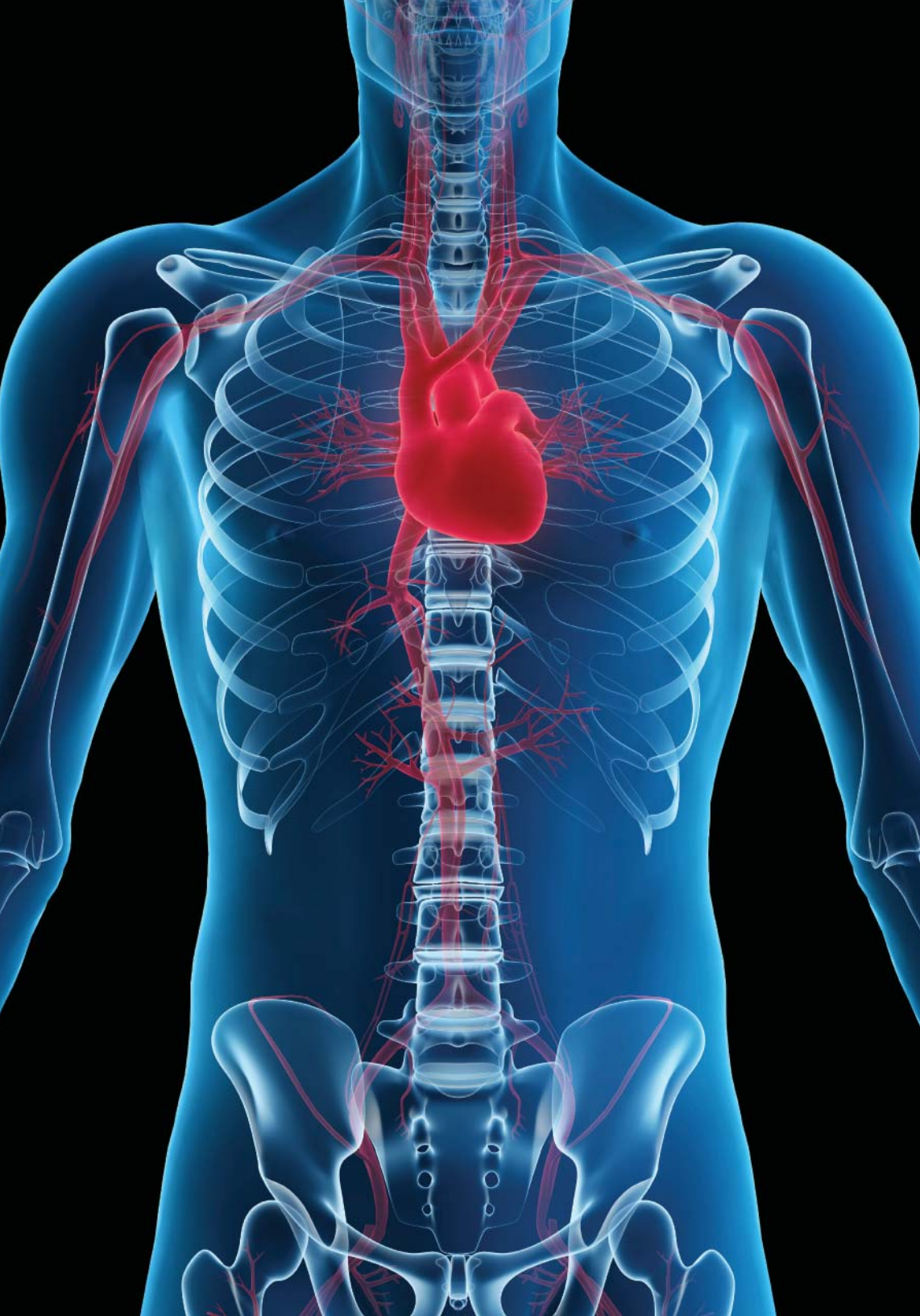
The immune system plays a fundamental role in protecting the body from cancer cells by killing cells which contain mutated DNA. However with age the immune system becomes weaker and more cancer cells can slip through the immune system's surveillance. HIV attacks the immune system, making it less able to fight off diseases and therefore increases the risk of developing cancer.

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:** is caused by a virus from the herpes family and grows into 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 off disease. Lymph glands are mainly in the neck, under the arms, 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 (see Annual Testing on back pages)

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, shown overleaf



Blood and Cancers – Haematology and Oncology continued

NON-AIDS RELATED CANCERS

- **Lung cancer:** smoking is the main risk factor and symptoms include a prolonged 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 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 or HIV. Smoking, drinking alcohol, using recreational drugs and sharing needles or other drug equipment are also risk factors

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 interact to start the cancer process
- These 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 **(see pp. 20-21)**
- If there is a family history of the cancer it is important to look out for symptoms and report anything unusual to the 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, either those that are HIV-related or 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.

Liver disease is common in HIV infection, mainly due to co-infection with hepatitis B or C. Other causes are the misuse of alcohol and recreational drugs, as well as the long term exposure to the toxic effects of HIV medication. It is also thought that HIV infection itself may damage the liver

Alcohol consumption and recreational drug use should be prudent, especially with liver disease

Inform all health professionals, whether alternative, complementary or orthodox practitioners, of all medication taken, including supplements, minerals, vitamins and herbs

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 (**see p. 23**) 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.

Ageing does not affect the different functions of the liver in the same way. 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 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 are inconclusive. 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 may 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.

RISK FACTORS FOR DEVELOPING LIVER DISEASE

- **Many drugs** cause differing levels of liver damage, most of these drug side effects are known and liver function will be closely monitored if these drugs have been prescribed. Drug interactions will be closely monitored and dose changes will be made as required
- **Non prescription drugs** are also known as over-the-counter (OTC) drugs and may have side effects that include damage to the liver. The pharmacist will usually indicate this when the medication is being bought
- **HIV medication** 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 because of the low level presence of the virus itself
- **Viral hepatitis B and C** when chronic and also hepatitis caused by some other infections, usually viruses, may all cause liver disease. Acute **fulminant** hepatitis A or E can lead to a person dying from the infection, therefore vaccination against hepatitis A should be undertaken for people with HIV infection unless immune
- **Obesity** may result in abnormal amounts of fat being deposited in the liver, which may cause abnormal liver function
- **Excessive alcohol intake and recreational drug use** also cause liver damage and both may impair the processing of medication including ART
- **Vitamins and supplements** in high doses may cause liver disease, especially very high doses of Vitamin A. Some herbal medicines and high protein shakes may cause alteration in liver function without causing disease, but this may cause an alteration in the processing of other drugs such as prescription medications and ART
- **AIDS-related opportunistic infections (OI)** which may occur prior to commencing HIV medication, such as TB and CMV (cytomegalovirus)
- **Low CD4 counts** may predispose to developing liver disease
- **Sharing equipment for tattoos and injecting drug use** may lead to being infected with hepatitis B or C, which may lead to liver disease developing

Liver and Hepatitis Co-infection – Hepatology continued

Tests to detect liver disease

A liver function test (LFT) is a blood test that measures 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 gluteryl transferase (gamma GT) (**see back page**), may be raised altogether or in particular patterns related to different types of liver disease. A liver scan 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, is used to measure fibrosis or stiffness of the liver and may be done instead of a biopsy.

SYMPTOMS OF LIVER DISEASE

- Nausea and /or vomiting
- A persistent dark colour to the urine
- Light coloured stool
- Yellow tinge to the skin and whites of the eyes known as jaundice, which may be very subtle
- Tiredness that cannot be otherwise explained

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

If antibodies are not present then vaccination to prevent future infection may be suggested

Hepatitis B

If antibodies are not present and there is no immunity to hepatitis B, further tests are performed to establish the presence of active infection, indicated by surface antigen (HBsAg) and e-antigen (HBeAg), which may require treatment. If another antibody, hepatitis B antibody (HBsAb) is negative, vaccination against hepatitis B will be suggested

Hepatitis C

If antibodies are present, a hepatitis C viral load is performed; a viral load confirms a diagnosis of active hepatitis C infection is confirmed and treatment may be necessary

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

Peripheral neuropathy can be HIV-related or caused by other factors, but treatment may improve symptoms

Access to a variety of services may help symptoms of neurological disorder, whatever the cause

Starting treatment earlier may reduce progression of HIV-associated neurocognitive disorder

Nerves, Brain and Dementia – Neurology

Both ageing and HIV associated conditions result in deterioration of the nerves, the muscles they supply and brain function, including cognitive function. Starting ART earlier and choosing particular combinations of therapies are thought to prevent or decrease the extent of possible damage to the brain, including the progression to dementia

The loss of functioning cells in the brain due to ageing leads to a reduction in the ability to memorise and to learn new skills (cognitive function). In addition, the complex network of nerves supplying the rest of the body become less efficient, with decreasing reaction times and therefore slowing down of responses. There is significant individual variation in the rate that these changes occur with age. These processes are further complicated and sometimes exaggerated by HIV infection and **ART**.

Symptoms of neurological illness may be subtle and therefore easy to 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 indeed anywhere. Over-the-counter medications are often used to treat these symptoms, but instead they should be reported to the GP or HIV doctor.

Peripheral neuropathy

Peripheral neuropathy (PN) is 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 on the nerves, ART, other medications, vitamin deficiencies, diabetes (**see p. 47**), excessive alcohol intake, cocaine and amphetamines (**see p. 23 Appendix 3 p. 118**).

Tests for peripheral neuropathy include blood tests and more specialist tests such as **nerve conduction studies (NCS)** and **electromyogram (EMG)** to check muscle function. Symptoms may be improved by removing or reducing the cause. Specific medication may also help by preventing or improving PN. This should be discussed with the HIV doctor.

Nerves, Brain and Dementia – Neurology continued



The senses

The senses of which we have five, taste, touch, hearing, sight and smell may also be affected by ageing, most commonly hearing and sight (**see p. 81**). Taste and smell are usually well maintained with ageing, but are more often affected by medication. It is very important to differentiate between what is an effect of ageing and what might be a complication of HIV infection or **ART**. This should be discussed with the GP or HIV doctor.

Hand function

Hand function decreases with age in both men and women, especially after the age of 65. This decrease in function is 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, rheumatic arthritis or PN, that are more common with age and HIV infection. Hand function and aids to improve it can be assessed and provided by occupational therapists and physiotherapists (**see pp. 31-33**).

Stroke

Stroke, due either to clots in blood vessels or bleeding from blood vessels in the brain, may cause paralysis of one

side of the body or of a limb and may also affect speech, depending on where the clot or bleed occurs in the brain. Improvement in or even recovery of the function that has been lost by a stroke is possible with the aid of physical and occupational therapy (**see pp. 31-33**). Lifestyle changes may reduce the risk of stroke (**see p. 41**).

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. **Neurocognitive impairment** in HIV infection may involve cognition (thinking), motor control (slowing of reflexes) and psychological state (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

‘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, philosopher,

Nerves, Brain and Dementia – Neurology continued

These symptoms are thought to be due to a change in the brain’s chemical environment triggered by HIV infection. These changes also occur with ageing, but may occur earlier with HIV infection. Changes may be mild and may not even be noticed by the person affected. More severe symptoms may develop and become more disabling as dementia encroaches.

If the lowest ever **CD4 count** (known as the nadir) is below 200, it is a risk factor for significant **neurocognitive decline**. This is the case even if undetectable viral load and good CD4 levels are achieved subsequently with ART. This implies that HIV-associated brain disease is irreversible and underpins the argument for starting ART earlier. The entire spectrum from mild to severe is defined as HIV-associated neurocognitive disorder (HAND).

HAND

Asymptomatic neurocognitive impairment (ANI): where the brain changes are present but as implied there are no symptoms. It is diagnosed when people with the condition score slightly less on neuropsychological testing but there are no symptoms evident to the person or to others

Mild cognitive impairment (MCI): symptoms in MCI may range from 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): this is characterised by significant difficulty with memory, such as taking medications properly and 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 not clear whether MCI leads to HAD as those with stable MCI may remain so for years

Neurocognitive decline occurs both as a direct effect of HIV infection and also with ageing. Some ART may offer more protection against neurocognitive decline in people with HIV infection by reducing the activity of the virus in the brain more effectively. However there is research to show that changing ART for whatever reason is associated with a decrease in quality of life. It is therefore important to establish the cause, if possible, and extent especially, of changes in neurocognitive function by specialised testing prior to changing medication. Such neuropsychological testing is becoming part of standard care in many HIV Clinics, in conjunction with a review of the particular combination of ART being taken.

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

(Genesis, Chapter 27, Verse 1)

Eyes and Eyesight – Ophthalmology

Although ageing affects almost everyone’s eyesight, advances in medical technology mean that treatment is available to preserve or restore excellent vision for an entire lifetime

The commonest reason for eyesight to deteriorate is the ageing of the lens. In normal young and adult life the lens is crystal clear and flexible. However, ageing causes the lens to become cloudy, forming a **cataract**, which results in reduced vision. A cataract can be removed surgically and replaced by an artificial lens.

The lens also becomes less flexible and loses its ability to focus over a wide range of distances. A stiff lens can only focus on more distant objects and is unable to focus well on nearby objects or vice versa. This condition is known as **presbyopia**. Holding a newspaper at arms length to be able to read it is a common sight. Presbyopia is treated with glasses, usually bifocals or varifocals.

Once the immune system has been restored with **ART**, there are no specific eye conditions that are associated with HIV and ageing. However, diabetes and high blood pressure (**see pp. 47, 41**), both more common with HIV infection and ageing, affect the retina, the membrane at the back of the eye, causing visual deterioration and even blindness. Yellowing of the eye membrane may be caused by certain ARV medication and also by

inflammation of the liver as a result of hepatitis B and/or C infection. Regular visits to the HIV doctor and co-infection clinic may result in treatment and a change in medication if required.

There are other conditions that affect the eye with age but there is as yet no evidence to say that HIV has a direct effect on these conditions. Tear ducts and the outer membrane of the eye, called the cornea, are both subject to the wear and tear of ageing. The other two most 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. Any sudden change in vision or loss of vision should be reported to the Accident and Emergency Department immediately.

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 of diabetes, high blood pressure or glaucoma

Sexual Life and Hormones Andropause and Menopause

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

It is important to discuss problems related to sexual function with the HIV doctor or another health professional

Treatment and support are available to reduce the physical and psychological effects of andropause and menopause on sexual function and life generally

Andropause

Andropause is the term used to describe all the symptoms associated with a low testosterone level. The **testosterone** level begins to diminish in all men from 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. In HIV infection testosterone deficiency begins at an earlier age and is more common 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 binding hormone globulin (SHBG). SHBG binds some of the available testosterone circulating in the blood, leaving even less testosterone available for use by the body. Therefore, the available amount of testosterone is even less for the tissues in the body that require it, which may cause various physical and mental changes which constitute the andropause.

Symptoms of the andropause include:

- Low sex drive
- Decreased early morning erections
- Difficulties getting erections or erections 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**. 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 the doctor. Low testosterone levels put men at a higher risk for developing osteoporosis (**see p. 59**). Further research is required, but studies have shown that low testosterone probably increases the risk for **cardiovascular disease (CVD)** (**see p. 41**). Other studies have

Symptoms of the menopause include:

- **Insomnia (difficulty sleeping) and night sweats** can be symptoms of HIV infection as well, either due to the stress associated with being positive or secondary to HIV medication
- **Skin and hair changes** are secondary to reduced hormone levels with the skin becoming drier and the hair thinner and more brittle. These changes continue with ageing beyond menopause but may also occur with HIV infection, associated illnesses and medication
- **Fatigue** is feeling tired all the time and low energy levels that are not relieved by rest. This may be a symptom of menopause, HIV infection and/or **ART**
- **Increased incidence of urinary tract infections** result from the reduced hormones leading to thinning of the membranes lining the urethra (the tube from the bladder to the opening through which urine is passed). This is unlikely to be a symptom of HIV infection, although it may indicate a sexually transmitted infection
- **Hot flushes** are a sensation of heat usually involving the face and upper body and it may be associated with a tingling sensation in the same area and a fast heart beat. They last for a variable amount of time but usually not longer than several minutes
- **Bone thinning or osteoporosis (see p. 59)** as mineral in bone is lost with the ageing process. After menopause this occurs more rapidly in women with the reduction in oestrogen levels. Those with HIV infection also have low bone mineral density and some anti-retroviral medications may result in leeching of the minerals from the bone and an increased risk of fractures

Sexual Life and Hormones Andropause and Menopause – continued

indicated that older men with low testosterone levels are at higher risk of developing cognitive impairment (**see pp. 19, 75**).

Other causes for low testosterone, including medication, will be investigated. It has been shown that treating low testosterone may be beneficial in providing relief from the symptoms of andropause, especially in helping to prevent osteoporosis. Lifestyle changes that include regular exercise (**see pp. 24-25**), stress release and good diet are also recommended (**see p. 19, Appendix 1 p. 114, Appendix 3 p. 117**)

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

Menopause

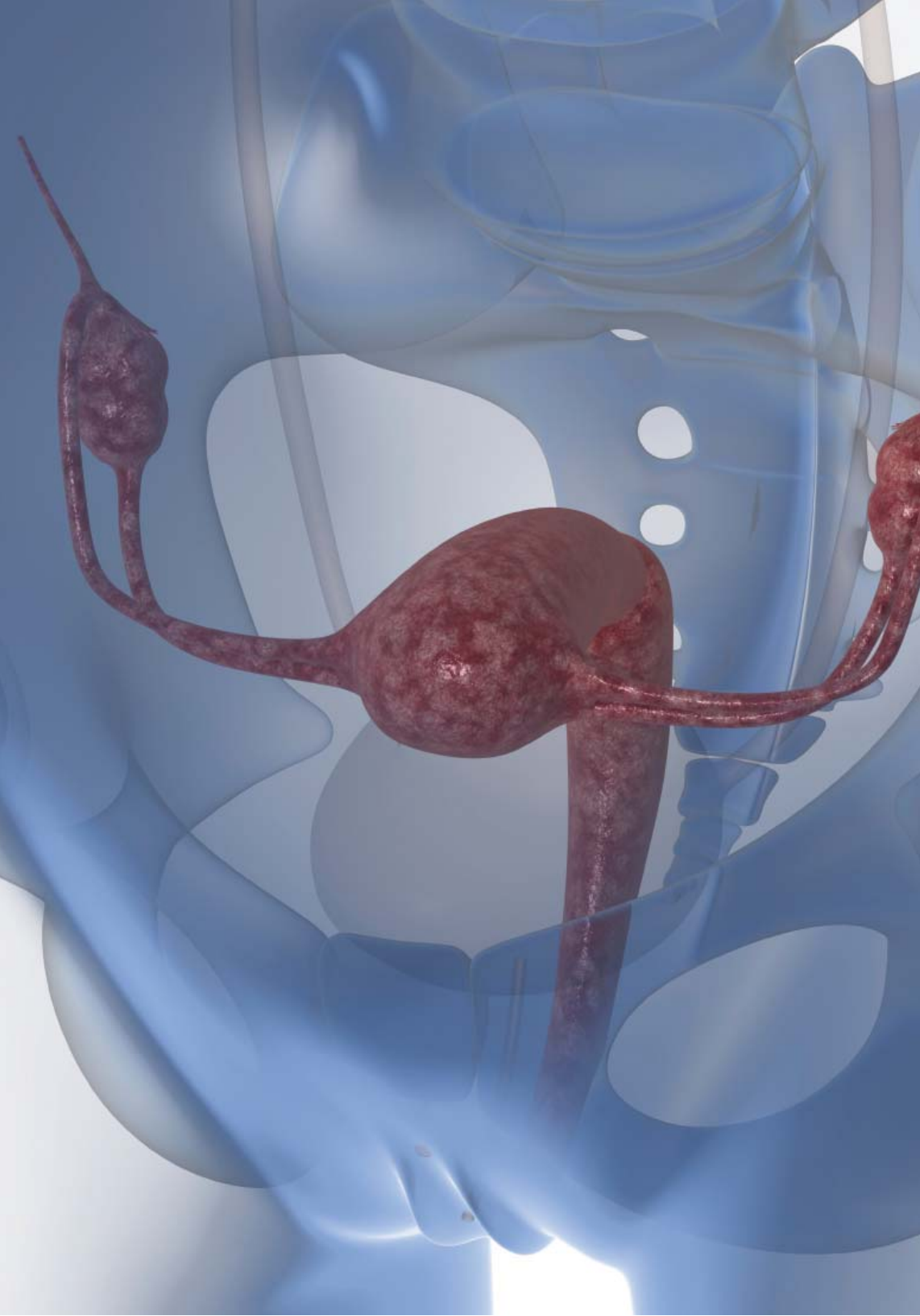
Menopause is the stage at which the ovaries stop producing the female sex hormone, oestrogen, menstruation (having periods) ceases and bearing children is therefore no longer possible by natural means. It is a gradual process occurring anywhere between the ages of 40 and 55. Women with HIV infection may experience irregularities in their cycles, without being in the menopause. It is important that this is discussed with a doctor to establish whether the changes are due to the menopause or are HIV-

related, a combination of both or from another cause.

There is a wide individual variation in the symptoms that women experience during menopause, from mild to severe and sometimes devastating. Symptoms of the menopause are treatable, but there are risks and benefits, especially if HIV positive. Hormone replacement therapy (HRT) may reduce hot flushes and the incidence and severity of symptoms of urinary tract infections.

However, the option of treatment and its side effects should be discussed with a doctor. HRT may have a negative effect on pre-existing liver disease and may affect the level of triglycerides in the blood (**see p. 45**). 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. In addition, regular screens for sexually transmitted infections are essential with continuing sexual activity.

Regular breast examination is essential during and after 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



Sexual Life and Hormones Andropause and Menopause – continued

if nothing is found the 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 nipple or any discharge from the nipple should be reported to a doctor immediately.

Mammograms (X-rays of the breast) are performed regularly, usually every three years. This may change with change of Department of Health policy. If there is a history of breast cancer in the family, formal breast examination and mammogram will be undertaken more frequently.

HIV infection itself does not increase the risk of breast cancer. HIV medication, as with other body parts, may cause changes in the breast, making them larger and lumpier. The lumps are usually benign cysts. In such instances it is vital to be on high alert as an increase in size and presence of cysts may mask a

new lump. Consult a health professional earlier rather than later with any concerns.



Sexual Function

There is evidence to indicate that the more regularly a person has sexual activity throughout life, the longer it may be maintained. It is therefore important to review any changes in libido (sexual desire) or sexual activity as they arise so that they can be remedied as soon as possible

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 more 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, also need to be reviewed. **Autonomic neuropathy**, which is most commonly associated with diabetes (**see p. 89**), may also result in reduced erections and decreased sensation. Conditions and activities that cause vascular disease, including diabetes and smoking, as well as excess alcohol consumption and some recreational drug use (**see p. 23**), may lead to erectile dysfunction.

For people taking **ART**, it is important to recognise that certain medication and especially protease inhibitors, may affect sexual function. Other medication taken for associated conditions such as high blood pressure, stomach acid and depression may also affect sexual function. **Testosterone** levels should be measured in both men and women complaining of a decrease in libido.

Various factors, such as stress at work, may not only cause sexual dysfunction but may also influence the severity of the pre-existing condition.

Treatment may include medication, local topical treatment for vaginal dryness, psychosexual counselling, relationship counselling and psychotherapy related to stress relief (**see p. 19**). Early diagnosis of sexual dysfunction will lead to early treatment. Consultation with the relevant health professional is essential.

Skin, hair and nail problems are common in people with HIV infection and in ageing, but they can be relieved and treated with medication, good care and hygiene

Life long skin care will reduce the effects of ageing; this includes careful exposure to the sun, which will also reduce the risk of skin cancers. Good nail care will help to prevent injury and infection and this includes properly fitting footwear

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 first 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 (**see pp. 20-21**), excess alcohol and recreational drugs (**see pp. 19-23**).

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 BCC is increased by episodes of sunburn in childhood
- The risk of SCC 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 people
- Older age
- Family history of skin cancer
- A compromised immune system as seen in HIV infection

Everyone needs exposure to sunlight to allow activation of vitamin D in the skin and to maintain normal vitamin levels in the bone, which promotes good bone

NAIL CONDITIONS:

Periungual warts are due to infection with human papilloma virus (HPV). These occur especially in people with compromised immune systems

Chronic paronychia is caused by **candida** and bacterial infection. It may be difficult to treat due to the ongoing exposure of the nail to daily wear and tear. Toe nails are more commonly affected

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

Infection and gangrene may be caused by any impairment of circulation and sensation seen with ageing, such as a **peripheral neuropathy (see p.. 75)** or diabetes (**see p.. 47**). Regular podiatry (**see p. 35**) is essential to prevent this occurrence

health (**see p 59 Appendix 3 p 118**). However, it is very 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 also increases with age and the hair that remains also becomes more brittle. In men, there is a particular male pattern of balding that is all too familiar. It is important to distinguish what changes are associated with HIV

infection and/or medication and what are due to ageing or another incidental condition.

The most common cause of hair loss worldwide is iron deficiency. Stress, either physical or mental, may result in a condition called **alopecia** which may cause partial or total hair loss. Abnormal thyroid function may also result in hair loss. The presence of these conditions will be checked for at the regular appointments with the HIV doctor and onward referral to the appropriate specialist, usually the dermatologist, will be made. Iron and thyroid levels will be checked annually or earlier if a symptom 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 (**see p. 19**). B-complex vitamins and soya supplements can help relieve dry skin and hair and also hair loss.

Nails

Nail disorders are frequent in the ageing population. In part, this is due to impaired blood circulation. Other factors leading to nail problems are 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 helps maintain good nail health. Nail infections and problems

Side effects and drug interactions increase with age

Any new or unusual symptoms might be related to medication even if the drug has been taken for a long time

Drug Handling and Interactions

Ageing affects the ability of the body to handle drugs, both prescribed medications and nonprescription drugs. An increasing number of drugs are prescribed with ageing which in turn increases the number of possible drug interactions and side effects

Just as the speed and pattern of ageing varies in different people, so the way that the body handles 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 the liver and the flow of blood to the liver, and reduction in **enzymes** (the chemical substances) which break down drugs.

Both medication and nonprescription drugs are broken down in the body so that the active ingredient may be utilised to do its job. This occurs in various 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 and hence the greater the number and doses of medication required to keep healthy. Many of these medications interact with each other and interactions between drugs will increase, as the metabolism of each drug is also affected by ageing. Regular checks with health professionals will ensure correct dosing and reduction of possible side effects. Any new side effects should be reported to a doctor immediately.



Drug Handling and Interactions – continued

HOW DRUGS ARE BROKEN DOWN IN THE BODY

Absorption: it is not clear whether age-related changes in the absorption of drugs are clinically relevant. As people age 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 may also vary from individual to individual

Distribution: body fat increases with age. Drugs known as lipophilic drugs, including protease inhibitors (PIs), depend on fat to be absorbed. The increase in body fat with age increases the storage of these fat loving drugs and may decrease the speed with which they leave the body. This may result in large amounts of the drug accumulating and therefore an increase in the toxic effect of the drug

Metabolism: the biochemical pathways by which drugs are processed are also affected by ageing and therefore affect the rate at which drugs are cleared from the system. For example, concentrations of some drugs in the blood have been shown to be approximately 37% higher in patients older than 42. Also the proteins which transport drugs through the body may alter with age. These factors help explain the changes in side effects and interactions between drugs in the body

Elimination: once the drugs have done their job in the body, the left over waste needs to be eliminated. Elimination of drugs from the body occurs through the gut, the liver and the kidney. Elimination via the kidney may be affected because the rate at which blood flows through the kidney is diminished with increasing age by as much as 50% and may result in an increase in the toxic effects of the drug

Research into many aspects of ageing with HIV infection is needed

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

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 a new area 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 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 a Holy Grail for many researchers and health professionals. Other sections in this guide have outlined conditions, including heart disease, cancers and bone loss, which affect people with HIV infection earlier. Although research has described many age-related issues in people with HIV infection and suggested some reasons why this occurs, there are significant gaps in medical knowledge that must be filled with carefully designed studies.

One reason why medicine 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 over 50 accessing HIV care has 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 over 50s is driven by transmission of new infections at an older age. Unfortunately older patients, who have a higher risk of disease progression and complications, are more likely to be diagnosed late. Data relating to the rate of HIV and risk factors in older age groups are crucial.

Research is the cornerstone of 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 – continued

- 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's well accepted that anal cancer is increased in people with HIV infection but there are little data regarding progression of early abnormalities, cost-effectiveness and which method is best
- Older age groups are frequently excluded from clinical trials, as are those with significant medical problems. More concentrated efforts to study antiretrovirals (ARV) and detailed safety data in these groups could optimise therapy and monitoring
- Should **ART** be tailored according to age? Liver metabolism of drugs changes with age (**see p. 95**). If trials of lower doses of ARV prove **efficacy** then this strategy could reduce toxicity. Are there any unforeseen interactions between ARV and ARV classes with ageing?
- 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 on whether this is a better strategy for those with HIV infection than the current hospital-based specialist set-up. Studies to investigate quality of care, patient satisfaction and cost should guide future developments for care provision for those with HIV infection



Research into Ageing – continued

- 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 to identify **cognitive dysfunction** earlier? Should there be different blood pressure and cholesterol targets?

Trials that are specifically designed to address age-related issues are required with better representation of older people in these trials. Pooling of data and experience across clinics would enable better study of the incidence and risk factors for age-related morbidities and help design interventions to optimise the health of people with HIV infection. Research into ageing and HIV infection must provide meaningful, informative, mechanism-based reports that will offer treatment options.

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 STIs

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 requires further research but will require 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, including optimising **ART** and earlier review of the known risk factors is essential.

Since the advent of ART fewer people are being admitted to hospital. Instead not only is there a greater demand for outpatient services, but the demand 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 TB

The rising number of new HIV infections in those over the age of 50 is touted as a new epidemic. Many of these people present late, not only because sex 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. Some research has shown that the older a person is when first infected with HIV, the greater is the **CD4** cell loss. This may be changed by starting therapy, however further research is needed. It is crucial that there is increased surveillance in detecting new HIV infection in the older population.

All these issues put an increased burden on already compromised health services. Cost constraints 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

‘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 – continued

increasing probability. The concept of a one-stop shop for holistic HIV care may be endangered. New models of care need to be explored.

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 rise again 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

020 7820 1343
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 on 0800 0 99 66

www.ageconcern.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

19-23 Ironmonger Row
London EC1V 3QP
Phone: 020-7553 6500

www.cpa.org.uk

AGILE

A Clinical Interest Group of the Chartered Society of Physiotherapy and is for therapists working with older people

For constantly updated information, such as dates for AGILE study days or

events etc members are advised to visit the AGILE moderated older people's network at

www.interactivecsp.org.uk

Alzheimer's Society Lesbian and Gay Network

Can be contacted through the Alzheimer's Society national helpline: 0845 30000336

Support service for lesbians or gay men in support roles:

01 843 220932 or 01 865 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

Careers and Learning

www.direct.gov.uk

www.reed.co.uk/learningcentre

Carers

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

020-7480 7788
www.carers.org

Cosmetic help

See www.aidsmap.com
www.medibolics.com and
www.muscltalk.co.uk

Sussed and Smart Muscle are both support groups providing information about steroid use

The British Association of Plastic, Reconstructive and Aesthetic Surgeons

at the Royal College of Surgeons
35-43 Lincoln's Inn Fields
Tele: +44 (0)20 7831 5161
+44 (0)20 7831 5161
Fax: +44 (0)20 7831 4041

Counselling

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

UK Council for Psychotherapy:
www.psychotherapy.org.uk/

British Association for Behavioural and Cognitive Psychotherapies:
www.babcp.com/

British Psychoanalytic Council:
www.psychoanalyticcouncil.org/

Relationship Advise:
www.relate.org.uk

Royal National Institute for Deaf People

Fact Sheets on how to choose a hearing aid and other aids for the hard of hearing

www.rnid.org.uk

Dentists

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

EACS

www.europeanaidscinicalsociety.org

Exercise

The YMCA runs special programmes for people with HIV infection

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

Further Information – Web Links and Resources

HIV Life Insurance

www.lifebroker.co.uk

Mortgages

www.hivmortgages.com

Older Lesbian, Gay Men and Bisexuals

Polari

Works for better services for older lesbians, gay men and bisexuals and runs an information service

020-7255 4480

www.casweb.org/polari

www.stonewall.org.uk

www.ageconcern.org.uk/openingdoors

Osteopathy

General Osteopathic Council

020 7357 6655 or 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

1 Fellmongers Path, Tower Bridge Road, London, SE1 3LY

Tel: 020 7234 8620

or 020 7234 8620

www.feetforlife.org.uk

Smoking

<http://www.quitline.org.uk>

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

NHS Stop Smoking Helpline

0800 0224332,

www.smokefree.nhs.uk

The Body

A website addressing issues for patients living with HIV infection

www.thebody.com

Project Inform

Patient information and patient advocacy

www.projectinform.org

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

Women

www.fortimelesswomen.com



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 progress. Examples include cardiovascular disease and risk of **heart attack** and **stroke**; increased risk of fractures; **neurocognitive impairment**; and increased risk of **cancer**.

INCREASED 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
- Eat at least five portions of fruit and vegetables daily will 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 maintain a healthy weight

INCREASED 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

INCREASED FRACTURE RISK:

- 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

INCREASED RISK OF COGNITIVE DECLINE:

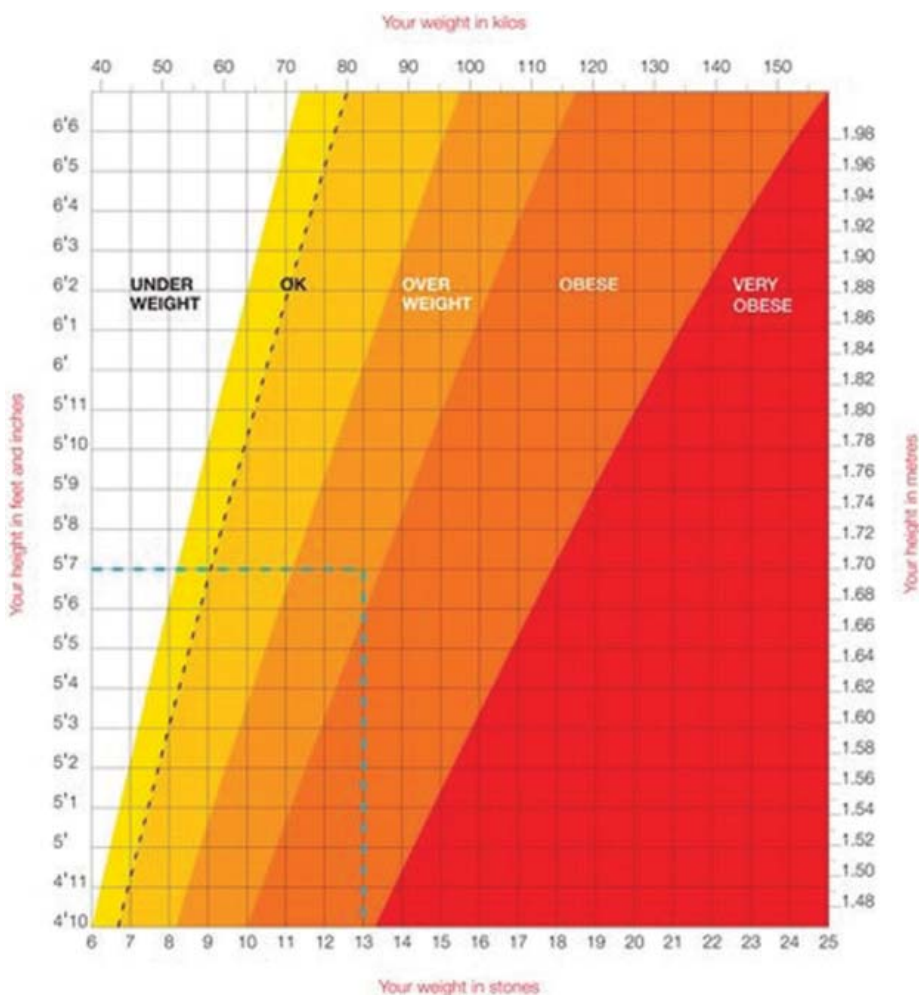
- Eat oily fish two or three times per week
- Aim to eat at least five portions of fruit and vegetables daily. This will provide the vitamins and minerals needed for healthy brain function
- Drink sensibly as drinking too much alcohol is bad for brain function, so keep within recommended limits

INCREASED 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. Antioxidant vitamins are found in brightly coloured fruits and vegetables so make sure there is plenty of colour on the plate
 - 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 or walnuts and seeds

- Palm oil and coconut contain high levels of saturated fat, so instead use corn, sunflower or olive oil
- 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 – continued

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, and 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 the 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, tofu, spinach, kale and spring greens
- Leafy vegetables also provide vitamin D
- Oily fish are good sources of both vitamin D and calcium
- Vitamin D can also be found in liver, eggs, fortified margarine and some breakfast cereals
- Eat protein foods at each meal, ideally three times a day
- Protein foods include 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, or walking up stairs, as well as going to the gym
- Check with a doctor or a physiotherapist that the 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 the 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 a water bottle 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 for longer than 1.5 hours 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 – continued

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 may 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 advice should be sought before taking it
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. 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 HIV medication
Garlic	In the raw form garlic may interact with HIV medication
Excess Vitamin A	Has been associated with liver and bone damage
Excess Vitamin B6	Has been associated with peripheral neuropathy
Excess Vitamin C	May cause kidney stones and interact with HIV medication
Chinese herbs	May affect processing of drugs by the liver
Excess selenium and zinc	May impact negatively on the immune system
Grapefruit juice	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

Instrumental activities of daily living (IADL):

are not necessary for fundamental functioning, but they allow an individual to live independently in a community. IADL are used to assess mostly what changes in the home might be needed to confer independence

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 anti retroviral medication (HAART)

Alopecia: absence 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

Angina: pain, nowadays used almost exclusively to denote chest pain caused by insufficient blood flow to the heart muscle

Antiretroviral therapy (ART):

medication given to suppress the HIV virus

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

Autonomic neuropathy: this occurs when the nerves that allow automatic function in some systems without thinking about it, for example, breathing and heart rate. If these nerves are affected, most commonly by diabetes, it may cause very low blood pressure, erectile dysfunction, or bowel upset or urinary incontinence

Avascular necrosis: A condition where the blood supply to the bone is cut off and the bone tissue dies as a result. It occurs most commonly at the hip joint and may require a hip replacement

Body Mass Index (BMI) – this is calculated by weight in kilograms, divided by height in metres, and multiplied by itself. The normal range is between 20 and 25 and indicates levels of obesity. See the chart in Appendix 2

Bone Density (DEXA) scan: A technique that measures the bone density and the severity of the thinning of the bone as in osteopaenia and/or osteoporosis. It also assesses the response to treatment

Candida infection: infection with the fungus *Candida albicans*, also known as thrush, and is present in the mouth and 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 infections may cause cancer as in Kaposi's sarcoma

Caries, dental: tooth decay causing erosion of the enamel and the dentine below the enamel. Plaque is the main cause for tooth decay

Cataract: loss of transparency in the lens of the eye, which is common with ageing and may also occur with diabetes

CD4 count: this is a type of immune cell particularly targeted by HIV and therefore its measurement indicates the extent that HIV is affecting the immune system. It is checked on a quarterly basis usually

Cardiovascular disease (CVD): cardio-(heart) vascular (blood vessel) – sometimes known as coronary artery disease (CAD). Cerebro- (brain) vascular

(blood vessel) refers to the condition that may result in a stroke

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 our cells

Doppler assessment: an assessment using ultrasound to measure the speed of flow of blood within the blood vessels, especially in the legs and the arteries in the neck; it helps to identify any blockage in the blood vessel

Electromyogram (EMG): is an abbreviation for the assessment of electrical activity in a muscle. It is often used in conjunction with nerve conduction studies (NCS) to assess if the nerve supply to the muscle is impaired, for example, as in peripheral neuropathy

Glossary of Terms – continued

Epstein-Barr Virus (EBV): a virus of the herpes family that is associated with cancer and with post viral fatigue syndrome

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

Enzymes: a substance present in the body that affects the rate of certain chemical reactions. Liver enzymes, for example, if they are 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

Evening Primrose Oil: this is oil that is extracted from the plant of the same name. It contains a substance called gamma-linolenic acid which is thought to have an anti-inflammatory action and is used in pre-menstrual syndrome and certain skin conditions such as eczema

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

Fibroscan: a scan that measures the stiffness of the liver, and so measures the degree of fibrosis. It is used extensively in hepatitis to monitor progress of the disease and in certain circumstances take the place of a liver biopsy

Framingham risk assessment: The Framingham Risk Score is a risk-assessment tool, taking into account factors such as age, cholesterol levels, high blood pressure, smoking status, and diabetes. This is used to evaluate the 10-year risk of having a heart attack in both women and men. However, up to 20% of heart attacks occur in women without any of the major risk factors covered by the Framingham model, partly because it excludes markers of inflammation or genetic predisposition, both of which are important in CVD. This tool is currently recommended by the National Institute for Health and Clinical Excellence (NICE) (see also Q risk)

Free radicals: highly chemically reactive substances that are present in the body and that facilitate many of the 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 Anti-Retroviral Therapy describes the use of combinations of 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 diabetics

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

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.

Hypogonadism: this occurs when the testes or the ovaries (the gonads) are not working properly, either due to a problem with the gonads, or with the pituitary gland (at the base of the brain) that may not be producing sufficient gonad stimulating hormone.

In men it may induce the symptoms of the andropause and in women it may induce the symptoms of the menopause

Inflammatory markers: these are blood tests that indicate the severity of a condition or infection that causes disease. The most common ones used are the ESR and the CRP. They are useful to monitor the activity of a condition, as they will return to normal when a condition, such as rheumatoid arthritis, is in remission. They also indicate the severity of the infection and/or inflammation.

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

Ketones: substances formed as a result of abnormal processing of glucose and found in the urine and indicate diabetes

Life expectancy/Longevity: the number of years a person can expect to live. This is affected by genetic and environmental factors as well as disease

Lipodystrophy: this refers to the redistribution of fat and there are two main types, Lipoatrophy (fat loss, for example in the cheeks) and Lipohypertrophy (fat accumulation, for example around the waist)

Glossary of Terms – continued

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

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; language, attention, reasoning, judgment, reading and writing. The most common initial symptom is forgetting where keys are left.

Nerve conduction Study (NCS): nerve conduction studies are tests to assess the extent of damage to a nerve that may be caused by diseases of the peripheral nervous system (nerves in the hands and feet, that is the periphery of the body). An electrical stimulus is applied to a nerve and the speed at which the nerve responds to the stimulus and transmits a signal is recorded and compared with normal values. NCS are usually performed with EMG, to distinguish

whether the problem is the nerve and/or the muscle

Paronychia: infection of the skin fold at the base of the nail. It is usually caused by a bacteria or a fungus

PCP: Pneumocystis carinii pneumonia, which may occur with a seroconversion illness but occurs most commonly with CD4 Counts lower than 200.

Peripheral neuropathy: pins and needles, numbness or a burning sensation that occurs begins in the peripheries, that is, the hands and the feet, and may spread upwards, and is due to an abnormality in the nerve. It has multiple causes which include both HIV infection and ART

Periungual wart: wart around the bed of the nail

Presbyopia: the progressive loss of the ability to focus on near objects that occurs with Age

PSA: this stands for Prostate Specific Antigen and is used to measure the severity of prostate cancer. It has also been used as a screening test for prostate cancer but its value is controversial.

Psoriasis: usually a long term skin condition that may involve joints as well. The skin patches are usually red and inflamed with silvery scales. It usually occurs in episodes or attacks, and may be triggered by stress, skin damage or physical illness

Q-risk: This is a relatively new cardiovascular disease risk (CVR) calculator, based on studies done on patients in the UK. It uses some of the same data as the Framingham but also includes the presence of inflammation from other conditions thought to affect CVR. It is increasingly used in the UK

Recommended Daily Allowance (RDA); the term that applies to the amount of vitamins that should be part of the daily intake for optimal function of body and mind

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

Testosterone: the hormone responsible for deep voices, muscle mass, facial and body hair patterns in men; it is also present in women to a much lesser extent

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

Urea and creatinine: both these substances are breakdown products that are excreted in the urine: urea is a by product from the breakdown 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.

Vaginal atrophy: changes in the vagina, usually around the menopause, due to the reduction in the production of the female hormone oestrogen; it usually results in vaginal dryness

Viral load: the numbers of copies of a virus in the blood. In HIV infection it refers to the numbers of copies of the Human Immunodeficiency Virus. But it is also used to describe the number of copies of hepatitis B or C or any other virus

Regular Tests

Please note:

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 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 people with HIV infection to attend for routine blood tests every three months. The Table below outlines the tests that need to be performed on a quarterly basis. Usually these blood tests are performed a week before the quarterly visit to the HIV doctor so that any abnormalities in the results can be discussed at the consultation and the appropriate action taken. The doctor may perform additional tests on that day, for example if there is an indication of an unexpected abnormality in the standard quarterly tests.

Quarterly blood tests

Viral load

CD4 count

Lipids/fats

Liver function

Kidney function

Bone function, including Vitamin D

Urine and/or blood glucose level

Red and white blood cells

Tests related to other conditions requiring ongoing treatment

Highly sensitive CRP (HS CRP) this may soon be a regular test; it is used to predict whether cardiovascular disease is likely to occur

Regular routine blood tests will establish whether the medication is doing its job, or whether doses need adjusting due to encroaching effects of ageing on the body systems.

Urine and/or Blood glucose level: this is a screen for diabetes which leads to 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. This is also part of the CVR which is done six monthly

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 (see XX) therefore plays a crucial role in managing lipid levels in the blood and around the body. The total cholesterol profile (**see Appendix 1 p 114**) is tested at routine visits and also forms part of the CVR Assessment done six monthly

Hormone Levels: HIV infection may result in a condition known as hypogonadism when the production of testosterone is impaired. Testosterone levels (**see p.. 83**) 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 the HIV doctor at the quarterly appointment, and this may include:

Blood Pressure: high blood pressure (hypertension) increases the risk of **cardiovascular disease (CVD)** (**see p.. 41**) 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 the doctor. Blood pressure readings also form part of a Cardiovascular Risk (CVR) Assessment, which is usually done every six months. 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, the HIV doctor will assess whether any further treatment or onward referral is required. In addition, if someone has developed back pain, this will be assessed and investigated

Regular Tests – continued

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 (DXA – dual energy X-ray absorptiometry) are performed every two years in those considered at risk of developing osteoporosis and more regularly, usually annually, in those who already have an increased fracture risk from osteoporosis (thinning bones)

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 been acquired or have changed 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

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. Prostate specific antigen (PSA), which may be raised in prostate cancer, should also be performed annually although the value of this test remains controversial

Women: in HIV infection there is a higher risk of developing cervical cancer (**see p. 83**). 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 3-5 yearly until the age of 65 years, but annually in women with HIV infection. For women with HIV infection who 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 the HIV doctor. Breast examination should also be carried out regularly by a woman herself and annually by the HIV doctor. However there is no known association between breast cancer and HIV infection

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

Mammogram: this will be performed on the advice of the doctor and in accordance with guidelines.

Vaccinations: vaccination against influenza is recommended for all HIV infection and is strongly recommended for HIV adults with additional risk factors such as

lung problems, as in 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 infection with CD4 counts greater than 200

Ask the HIV doctor for advice on these or any other vaccines

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