Aging with HIV/AIDS in the Netherlands

ANNEMARIE DE KNECHT-VAN EEKELEN

IN COLLABORATION WITH

CEES SMIT AND PETER REISS

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PREFACE

At the end of 2008 the Aids Fonds granted a subsidy to survey the living conditions of HIV-infected elderly patients in the Netherlands. A coherent study on this subject appeared to be lacking; there was no overview of the complex medical and psychosocial problems encountered by HIV-infected elderly people with comorbidities. This was all the more remarkable in view of the launch of a Dutch geriatric care programme in April 2008 which was expected to pay attention to elderly persons with comorbidities.

An editorial staff, under the leadership of Cees Smit Dr.h.c., initiator of this study, subsequently organised a meeting with a number of experts in the field of HIV/AIDS. At this meeting the blueprint for a book about aging with HIV was worked out. In the course of 2009 more than twenty Dutch experts in the field of HIV/AIDS further developed their vision on the living conditions of elderly HIV-infected patients in the Netherlands. At the same time, the editorial staff interviewed HIV-positive elderly persons, policy makers and others involved in geriatric care. All contributions were discussed at a second meeting, during which expectations for the future were formulated and recommendations for policy and research were made. This resulted in a book entitled *Aging with HIV – Health and disease of aging patients: an overview* [*Oud worden met hiv - Gezondheid en ziekte van oudere hiv-patiënten: een inventarisatie*] that was presented to the Dutch State Secretary for Public Health on 1 December 2009, World AIDS Day.

The content of the book *Aging with HIV* is based on data concerning the Dutch situation and is written in Dutch. Yet the problems that are reviewed do not only apply to the Netherlands. The situation in other Western countries with similar healthcare systems will be comparable or become so in the future. For this reason the Aids Fonds decided to publish an English compilation of the book, containing a selection of the information presented in *Aging with HIV* that would be relevant for a wider international audience.

The chapter titles of *Aging with HIV* as well as the authors' names and their e-mail addresses can be found in the back of this publication so that those who are interested can contact the authors. The complete list of literature used in *Aging with HIV* is included as well. The Dutch publication '*Oud worden met hiv - Gezondheid en ziekte van oudere hiv-patiënten: een inventarisatie*' can be obtained from the Aids Fonds on payment of the mailing costs.

The edition at hand has been made by the editor-in-chief of the Dutch publication, Ms Annemarie de Knecht-van Eekelen MSc, PhD; Ms Petra Hollak MA, has translated this text into English.

A special word of thanks goes to Professor Peter Reiss MD, PhD, one of the authors of *Aging with HIV*, who initiated the publication of this text in English.

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Annemarie de Knecht-van Eekelen

Amsterdam, June 2010

SYNOPSIS

THE FUTURE FOR THE ELDERLY WITH HIV

The complex problems of elderly HIV-infected persons in the Netherlands were first outlined in 2009. Even though the HIV-infected population is aging, remarkably little is known about their situation. Thanks to effective combination therapy, available in the Netherlands since 1996, an HIV-infected person now has a near normal life expectancy – despite the chronic infection. But the question is how this HIV-infected person will grow old. How important is the problem of comorbidity? Is the aging process accelerated in HIV-infected individuals?

Research aimed at answering these questions will not produce rapid results, yet these answers are needed in order to realise adequate care for elderly HIV-infected persons. An adjusted healthcare policy is essential for this new group of patients.

THE DUTCH HIV-INFECTED POPULATION

At the end of 2008, 12,252 HIV-infected individuals were being followed in the Netherlands. Seventy-nine percent of them was male, of which 59% was Dutch and 56% infected via homosexual contact. Of the female patients 2,257 were infected via heterosexual contact and 354 patients via intravenous drug use. Of 171 patients it is known that they were infected by contaminated blood (products). The mean age of the entire group was 44 years; the men were on average 6 years older than the women. In 2008, 3,319 patients were 50 or older; 2,946 (89%) of them were male and 373 (11%) female.

Part of the older HIV-infected population became infected before 1996. Their situation is different from that of patients who became infected after 1996, when effective combination therapy was available. Patients who have been infected for more than 15 years generally have more physical problems, especially fatigue, which prevents them from participating in the labour market. This problem may be less relevant for more recently infected persons.

NEW HEALTHCARE POLICY

A new healthcare policy can only be realised if certain preconditions are met. These conditions are related to advisory services, prevention, training, screening, treatment, organisation and financing.

THE NEED FOR CARE

The need for care of the HIV-infected elderly is wide-ranging. If the HIV-infected patient has to manage the disease him- or herself, or if this management is transferred to someone else, e.g. a case manager, the patient must be able to choose from a wide range of healthcare services. Some HIV-infected elderly patients may become part of the regular healthcare system on condition that the healthcare providers do have sufficient knowledge of HIV; others may require more specific care as provided by the 25 HIV treatment centres in the Netherlands. Broadening the treatment team

in these centres, expanding the outpatient clinic capacity, organising trial projects with new outpatient clinic structures and setting up collaborations with HIV-specialised general practitioners will be the basis for a new organisational structure.

CARE AND SUPPORT

The care and support for HIV-infected elderly persons should be extended. Among other things, specially adapted housing for specific groups of elderly persons needs to be established. Nursing home capacity must be increased and psychogeriatric provisions need to be expanded. Compensation for the costs of HIV medication must be adequately arranged. In the current Dutch situation, the cost of one month of combination therapy almost equals the annual budget for a patient's stay in a nursing home.

RESEARCH AGENDA

MONITORING

In order to dispose of basic data on the HIV-infected population information must be obtained by monitoring HIV-infected people. In the Netherlands this monitoring task is performed by the HIV Monitoring Foundation (HMF), in Europe by EuroHIV, and in the USA by the CDC.

THE AGING PROCESS

Research into the aging process in people living with HIV focuses on the relationship between the (consequences of the) HIV infection and the patient's physical and mental condition. The effect of aging on their state of health is unknown. The increasing incidence of malignancies may be connected with aging of the immune system. A better understanding of *frailty* is needed, a core concept with regard to the health status of elderly people in general. Very few prospective studies have for instance been performed into a possibly earlier menopause in HIV-infected women. And for the HIV-infected elderly in general a connection seems to exist between the HIV-infection and psychological problems as well as mild memory defects.

MEDICATION

Little is known about the effects and efficacy of HIV medication in elderly persons. Knowledge of the interaction between HIV medication and other drugs for comorbidities is limited. Studies are needed to evaluate more precisely the influence of HIV inhibitors on for instance renal function and bone metabolism.

ADVISORY SERVICES AND TREATMENT

Elderly persons generally know little about HIV and the mode of transmission. Yet they are sexually active, have different sexual partners and often practice unsafe sex. Older women do not insist on condom use because they can no longer become pregnant. Internet dating is booming and leads to contact between people who do not know each others' background. Advisory services are not geared towards the elderly. This sets an important new task for HIV/AIDS information organisations. Physicians generally do not consider an HIV diagnosis in case of an elderly person. This means that the HIV/AIDS diagnosis in elderly people is often made at a later stage and specific treatment is delayed, whereas an early start with combination therapy is recommended.

SCREENING

HIV-infected people are more susceptible to comorbidities, particularly certain types of cancer. Screening for anal cancer in HIV-infected men and cervical dysplasia in HIV-infected women is required.

MEDICAL NURSING CARE

Expectations are that the treatment of comorbidities will lead to a different need for care. In the Netherlands, the HIV/AIDS nurse consultants will be given an important role in the monitoring and direct medical care for patients with HIV. The general practitioner can coordinate this care, provided that she/he has sufficient experience in the treatment of HIV-infected persons.

TRAINING

Nurses will need additional training in both medical issues and the field of geriatric care to enable them to refer and advise patients. Education and advisory services for HIV specialists (internists-infectiologists) and HIV/AIDS nurse consultants about the psychopathology in HIV-infected persons are also needed. Information about the aging HIV-infected population is important for general practitioners, psychiatrists, psychologists, social-psychiatric nurses and social workers in order to provide the best possible care for this patient group. The same applies to neuropsychologists and sexologists.

SOCIAL SITUATION

Older HIV-infected persons often suffer from stigma which negatively affects their social functioning. In the current situation there is no effective link between treatment and care and between welfare and support for the elderly person with HIV.

ELDERLY PERSONS WITH HIV/AIDS IN THE WESTERN WORLD

NUMBERS OF HIV-INFECTED PERSONS

The Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organisation (WHO) estimate that in 2008 between 31.1 and 35.8 million people worldwide were infected with HIV, 2.8 million of whom were fifty years of age and older. Within Europe the number of people that recently became infected with HIV differs greatly among countries [Hamers et al. 2006; EUROHIV 2007]. According to the EUROHIV surveillance network 25,241 newly diagnosed cases of HIV infection, or 82.5 per million population, were reported in the European Union (EU) in 2006 – with the exception of Monaco, Italy and Spain where a national HIV reporting system is absent [EUROHIV 2007]. Thirty-five percent of these new cases are women.

The total number of HIV-infected persons in the United States of America (USA) is estimated at 1 million [Nguyen & Holodniy 2008]. In the year 2000 the highest reported incidence of HIV in the USA was among 20-29 and 30-39 year-old persons (33% and 39%, respectively), but the number of elderly HIV-infected persons was already growing [Sellers & Angerame 2002]. Yet only 6% of the entire population at that time (8044 patients) was 50 years old or older. However, this is clearly an underreported number, since notification of HIV cases is not mandatory in all states. According to the Centers for Disease Control and Prevention (CDC) 15% of all new AIDS patients in 2005 is aged 50 or older [CDC 2008]. Based on estimates from 2007 the number of new infections in persons over 50 years is 16.8% of the total number [see table 1].

Data for 34 USA states	2004	2005	2006	2007
Age at diagnosis (years)				
0–49	31,579	31,025	31,435	35,483
50–54	2,645	2,698	2,862	3,489
55–59	1,473	1,531	1,512	1,938
60–64	771	729	741	942
>65	696	657	643	803
Subtotal for 34 states	37,164	36,640	37,193	42,655
Data from dependent states	1,234	1,392	1,338	1,429
Total	38,398	38,032	38,531	44,084

Table 1: Estimated number of HIV/AIDS cases by year of diagnosis, 2004-2007; 34 USA states and 5 dependent areas with confidential name-based HIV infection reporting [Source: Centers for Disease Control and Prevention 2009]

HEALTHCARE POLICY IN EUROPE AND THE USA

DETECTION AND ADVISORY SERVICES

HIV has been on the political agenda of the EU for quite some time and the importance of the fight against HIV/AIDS is repeatedly being emphasised in the EU policy [Hamers et al. 2006]. This policy, both in the EU and the USA, focuses first of all on detection and registration of the number of HIV and AIDS cases and trend analyses of HIV/AIDS prevalence. The EUROHIV surveillance network objectives – www.eurohiv.org – are mainly aimed at early HIV/AIDS case detection and monitoring by collecting and analysing data in the WHO's European region (53 countries). Information about safe sex in homosexual contacts, access to health care for infected sub-Sahara African migrants and advice for injecting drug users and prostitutes are the policy's central points [Commission of the European Communities 2005].

The National Institute on Aging in the USA finds that HIV/AIDS advisory programmes generally focus on teenagers and people in their twenties and thirties, and that older population groups are ignored. At the same time, knowledge of HIV risks and transmission is very limited among elderly persons.

PREVENTION

In the USA a plea is made for establishing an urban HIV/AIDS policy. Primary prevention through risk reduction and healthcare improvement activities geared towards individuals, groups and the population at large, have been defined as the central goal. Again, the question how to set up the healthcare system in order to accommodate the needs of the growing population of elderly HIV-infected persons is ignored. Until recently, people over fifty were not considered an at risk group, partly because HIV-infected persons never lived this long and partly because people in this age category were not expected to engage in high-risk behaviour. By 'neglecting' this age group the HIV/AIDS diagnosis is often late and HIV/AIDS is underdiagnosed and undertreated. Professionals are under the impression that elderly people are well aware of preventive measures and the causes of HIV, are not or hardly sexually active and do not inject drugs. These assumptions however turn out to be false, as a result of which the number of elderly people with HIV in the USA is growing.

EARLY DETECTION

Early detection of HIV infection is important for a timely start of anti-HIV treatment and for preventing a further spread of the infection. One important problem that certainly occurs in the USA is the association between HIV and homosexuality, both of which are taboo [Sellers & Angerame 2002; Herek et al. 2003]. Elderly people with HIV suffer from stigmatization; 22% of the people between 55 and 64 years of age and 35% of those over 65 feels stigmatized compared to no more than 13-15% of people in their thirties and forties. This causes a three-fold burden: people suffer from the disease itself, from stigma, and from homophobia.

Sellers and Angerame [2002] advocate the standard inclusion of questions about sexual activity and drug use upon hospital admission of people over fifty, as professionals are often not aware that this group engages in the same high-risk behaviour as younger adults.

Data from the CDC shows that people diagnosed with HIV develop AIDS faster when they are older: in people 20-29 years of age 75% had not developed AIDS within one year compared to 45% in people 50-59 years of age and 38% in people 60 years old and older [Hall et al. 2006 in Luther et al. 2007]. Mortality among (very) old people diagnosed with HIV is high: 37% of people 80 years old and older in the USA dies within one month after the diagnosis, mostly because the infection is discovered too late [Zelenetz & Epstein 1998]. Many elderly people do not know when or how they became infected.

NUMBERS OF HIV-INFECTED PERSONS IN THE NETHERLANDS

THE HIV POPULATION

In the Netherlands demographic and clinical data from HIV-infected people are collected and managed by the HIV Monitoring Foundation (HMF), founded in 2001 [Gras et al. 2008]. Data are registered anonymously and voluntarily. At the end of 2008 the HMF had collected data from 16,178 HIV-infected patients, 12,252 of whom were still in follow-up at that time in one of the 25 designated HIV treatment centres. Most patients in follow-up in 2008 were male (9,660 patients, 79%), of Dutch origin (7,183 patients, 59%) and had been infected via homosexual (6,893, 56%) contact. Additionally, 1,596 (13%) men and 2,257 (18%) women had been infected via heterosexual contact and 354 (3%) patients via intravenous drug use. One hundred and seventy-one (1%) patients were known to have become infected by contaminated blood (products). Part of this group consists of haemophiliacs who were treated with blood products (coagulants) in the early 1980s.

The median age of the entire population is 44 years; the men are on average 6 years older than the women. Figure 1 shows the age increase over time in the patients in follow-up. In 1996, 16% of the patients was less than 30 years old and 10% was over 50 years old. In 2008 only 9% of the patients is less than 30 years old, whereas the proportion of those over 50 has increased to 27%. At present, 3,319 patients are 50 years old or older, 2,946 (89%) of whom are men and 373 (11%) women.

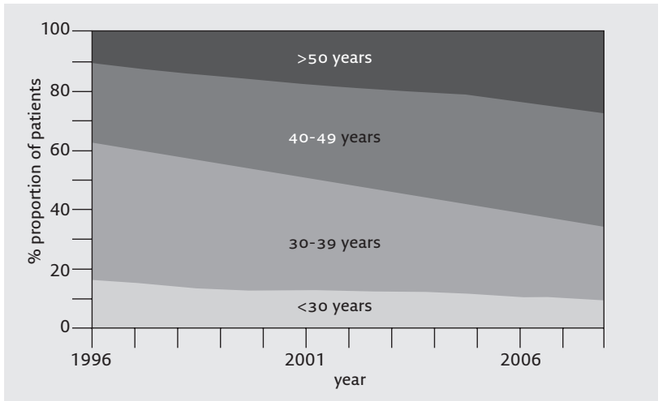


Figure 1: Proportion of HIV-infected patients by age group of the total number of HIV-infected patients in follow-up as of 31 December of each calendar year in one of the designated HIV treatment centres. [Source: HMF]

POPULATION OVER 50 YEARS OF AGE

The majority of the population over 50 years of age consists of homosexual men (64%; n = 2,128). In addition, this group comprises 461 (14%) men and 300 (9%) women who were infected via heterosexual contact. Four percent of the population over 50 was infected via intravenous drug use; of 8% the source of infection is unknown. Three-quarters of the patients is of Dutch origin; among homosexual men this percentage is as high as 84. Of the heterosexually infected patients 54% originated from the Netherlands, 18% from sub-Sahara Africa and 14% from Surinam or the Dutch Antilles. The group of elderly patients generally have known for many years that they are infected with HIV: 48% of the patients was diagnosed more than 10 years ago. Homosexual men are on average aware of their HIV status one-and-a-half years longer than other patients.

THE AGING POPULATION

LIFE EXPECTANCY

A 25-year-old HIV-infected person currently has an 80% chance of reaching the age of 50; before 1996 this was no more than 5%. Research in the Netherlands has shown that the survival rate in patients successfully treated with combination therapy is comparable to that in patients with diabetes [van Sighem et al. 2005]. Yet the life expectancy of HIV-infected patients is still lower than that of non-HIV-infected individuals. A large international cohort collaboration, including the HMF database, has shown that people who start combination therapy at the age of 20 have an average life expectancy of 69 years [The Antiretroviral Therapy Cohort Collaboration 2008]. In comparison, the average life expectancy of a non-HIV-infected 20-year-old male is 78 years. In conclusion, it seems as though HIV-infected patients age faster and that their life-span may be similar to that of non-HIV-infected individuals who are approximately ten years older [Effros e.a. 2008].

AGE AT HIV DIAGNOSIS

A second cause of aging of the HIV population is the higher age at HIV diagnosis. The average age of individuals diagnosed in 1996 was 37 years compared to 39 years in 2008. Homosexual men are not only diagnosed at an older age, but are also older at the time of infection [Dukers et al. 2007]. The annual number of new HIV infections among homosexual men is still growing in the Netherlands [Bezemer et al. 2008]. Yet the moment of start of treatment is still late for a large number of patients. One third of the homosexual men and approximately half of the heterosexual men and women over fifty have a CD4+ cell count below 200 cells/mm³ at diagnosis. Over 20% of the patients over fifty compared to 10% of the patients younger than fifty already presents with AIDS-related disease symptoms.

One of the reasons for this late diagnosis is that HIV testing was for a long time discouraged in the Netherlands. The proportion of homosexual men that is aware of their HIV status is lower in the Netherlands than in some other industrialised countries [Hospers et al. 2008]. It is estimated that approximately 25% of the HIV-infected homosexual men do not yet know that they are infected [Dukers et al. 2007; Bezemer et al. 2008].

PROGNOSIS

The HMF assessed the epidemiological characteristics of the HIV population in the period 2000-2005. This has been the basis for the development of a model to predict the age distribution of the HIV-infected population in future. According to this model, a total of 18,255 HIV-infected patients will be in follow-up in the 25 designated treatment centres in 2015 compared to 12,252 in 2005. Of this population, 14.273 (78%) are men and 3.982 (22%) women. The observed and predicted age distribution in 2000, 2005 and 2015 is shown in figure 2.

In 2015 the group of HIV-infected patients over 50 years of age will have doubled to 7,531 patients, which amounts to 41% of the total HIV-infected group versus 27% in 2005. The distribution between men and women will almost remain the same: 86% of the HIV-infected population over 50 in 2015 will be male.

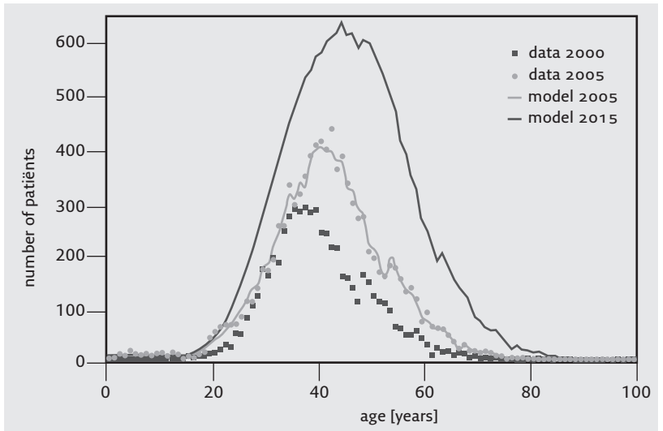


Figure 2. Observed and predicted age distribution in 2000, 2005 and 2015. The lines indicate the model predictions and the dots indicate the dates. [Source: HMF]

A 69-YEAR-OLD WOMAN

She has many physical problems. Maybe they are caused by her HIV infection, maybe by her medication. She takes nineteen pills a day. What bothers her is the lack of coordination between her physicians. She receives treatment from many different specialists who know very little about HIV. The dietician says that she is gaining too much weight, but she cannot eat less because of her medication and she cannot drink less because of her poor kidney function. The days are long and pass slowly, there isn't much to do. She has been very depressed; actually she rather wished she were dead.

AGING AND COMORBIDITY

THE AGING PROCESS

HIV/AIDS: A CHRONIC ILLNESS

Since the introduction of antiretroviral medication the HIV/AIDS death rate has substantially declined while the mean age of death has increased. HIV/AIDS has thus become a chronic illness that people can live with for many years. The main difference between HIV/AIDS and other chronic illnesses is the on average much earlier onset of HIV/AIDS. In 2008 the average age of death due to a chronic illness in the Netherlands was 80 years, whereas the average age of death for someone infected with HIV/AIDS was 50 years. Moreover, the age spread for chronic illnesses differs greatly from HIV/AIDS. The prevalence for almost every chronic illness increases with age, but the prevalence for HIV/AIDS is highest at the age of young adults and decreases at older ages. As HIV/AIDS is more and more becoming a chronic illness, the average age of HIV/AIDS-infected persons will increase.

THE EFFECTS OF NORMAL AGING

When people age normally, the risk of (chronic) illnesses and limitations increases. The Longitudinal Aging Study Amsterdam (LASA) shows that from the age of 65 more than half of the elderly already suffers from two or more of the following ten (groups of) diseases: asthma / chronic obstructive pulmonary disease (COPD), cardiovascular disease, peripheral vascular disease, diabetes, stroke, joint problems, cancer, hypertension, depression and anxiety [Deeg et al. 2002]. This prevalence gradually increases with age to approximately 90% for people 85 years and older.

With increasing age, a higher concentration of inflammatory mediators can remain in the blood after an acute infection, causing a chronic inflammation [Krabbe et al. 2004]. The most frequently examined inflammatory mediators are interleukin-6 (IL-6) and C-reactive protein (CRP). Increased concentrations of inflammatory mediators have been linked to virtually all chronic somatic diseases and to depression [Bremmer et al. 2008]. Moreover, inflammatory mediators independently affect the development or worsening of functional limitations.

Elderly people have an increasing chance of *frailty*: multisystem deterioration due to changes in the neuromuscular, endocrine and immune system related to aging [Fried et al. 2001]. Frailty is characterised by a fragile balance with little reserves to counter disturbances so that only a minor insult can tip the elderly person's balance [Campbell & Buchner 1997]. A distinction is made between frailty and chronic illnesses on the one hand and functional limitations on the other [Fried et al. 2004]. LASA uses a definition for frailty that includes physical and mental health aspects on the basis of the following criteria: low body weight, decreased pulmonary function (as a measure for weakness), physical inactivity, decreased cognitive functioning, poor vision, hearing problems, incontinence, symptoms of depression (including self-reported slowness and lack of energy) and little control (experienced) of his/her own life (*mastery*) [Puts et al. 2005a].

The frailty prevalence clearly increases with age. Twenty-five percent of the frail elderly in LASA showed loss of functioning after three years. After six years of follow-up 10% had been admitted to a home for the elderly or a nursing home. And a follow-up on death, finally, showed that 14.5% had died after 4.5 years. Among those with loss of functioning was a relatively high number of lower educated, unmarried and chronically ill people [Puts et al. 2005a, 2005b, 2005c]. Frailty is primarily an indicator of the severity of an already compromised health condition due to comorbidity and/or physical limitations.

HIV/AIDS AND AGING

Compared to normal aging, deterioration of the immune system develops faster in the presence of an HIV infection. Nevertheless, the hypothesis that similar mechanisms are active with HIV and with aging seems justified. A recent study in a cohort among American HIV-infected men indicated that the prevalence of frailty at the age of 55 in this group was the same as in non-HIV-infected men 65 years of age and older, namely 3.4% [Desquilbet et al. 2007]. This implies that the onset of frailty occurs more than ten years earlier in the lives of HIV-infected people. Moreover, the prevalence of frailty in this study increased with the duration of the infection and was 13.4% in 55-year-old men who had been infected with HIV for ten years.

The development of frailty with HIV/AIDS and with normal aging could thus be based on the same mechanisms. It has also been shown that a faster deterioration of the immune system with HIV/AIDS is associated with the emergence of frailty, independent from the use of HAART [Desquilbet et al. 2009]. As the life expectancy of HIV/AIDS-infected people increases, preventing frailty becomes more and more important.

THE IMMUNE SYSTEM AND INCREASED RISK OF COMORBIDITIES

Over the past years the effects of persisting cellular immune deficiency – as measured by a reduced CD4+ lymphocyte blood cell count – has become clearer. A decreased CD4+ cell count is associated with an increased risk of cardiovascular diseases, serious kidney and liver damage and certain malignancies and the concomitant risk of death, also in individuals whose HIV infection is suppressed by HAART. These malignancies are not traditionally associated with AIDS [Monforte et al. 2008; Baker et al. 2008a; Baker et al. 2008b; Phillips et al. 2008]. Despite successful HAART treatment a persistently lower CD4+ cell count is common, particularly among people who start HAART when their immune deficiency is relatively advanced. The chance of a reduced increase in CD4+ lymphocytes depends, among other things, on the age at which HAART is started. This chance increases with age [COHERE Study Group 2008].

Aging generally involves aging of the immune system (immune senescence); HIV also accelerates this process [Appay & Sauce 2008]. Another factor that probably hinders CD4+ lymphocyte normalisation is the persisting immune activation [Hunt et al. 2003]. Although the immune activation is reduced it nevertheless remains, despite optimal HIV suppression with HAART. With HIV a higher percentage of cytomegalovirus (CMV)-specific activated CD8 lymphocytes is associated with increased arteriosclerosis of the carotid artery [Hsue et al. 2006].

Immune senescence in relation with HIV probably coincides with a persistent chronic systemic inflammation. This inflammation stimulates the aging process on the cell and tissue level in different organ systems, resulting in function loss of the organ concerned. Function loss is probably further stimulated as chronic inflammation promotes thrombosis [van Leuven et al. 2008; Levi et al. 2006] and fibrosis [Libby 2007; Wynn 2008] in the relevant tissues. Also in patients using HAART a relationship between the level of inflammatory markers in peripheral blood and the risk of death in general and in cardiovascular diseases in particular was demonstrated [Kuller et al. 2008]. There are also new indications that persisting immune activation and inflammation may play a role in the increased chance of arteriosclerosis rather than persisting HIV replication [Hsue et al. 2009]. Despite optimal suppression of HIV, persistent immune activation and inflammation may not only be present in blood but also in the cerebrospinal fluid [Edén et al. 2007].

SIDE EFFECTS OF ANTIRETROVIRALS ON CELLULAR AGING

The process of cellular aging could be negatively influenced by side effects of some (classes of) antiretroviral drugs. Thymidine analogue nucleoside reverse transcriptase inhibitors (TA-NRTI) can decrease mitochondrial function through various mechanisms. Mitochondria are presumed to play a key role in the aging process and there are indications that some HIV protease inhibitors (PI) may compromise mitochondrial processes [Zhang et al. 2009].

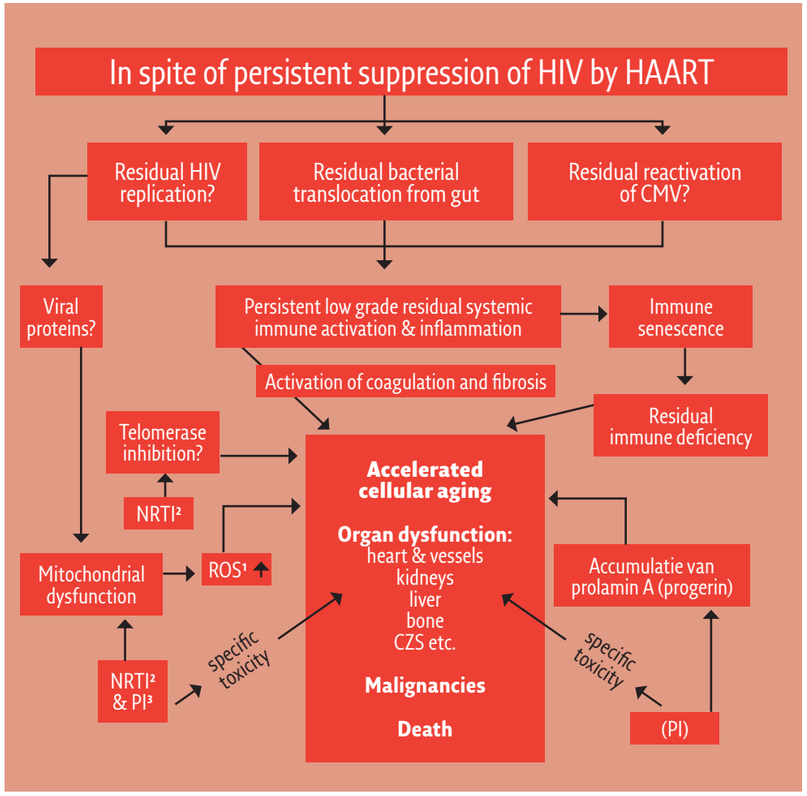
A number of HIV protease inhibitors have been shown to inhibit the enzyme ZMPSTE24 *in vitro*. They are thus able to interfere with the formation of physiological lamin A in the cell, which may lead to accumulation of prelamin A [Coffinier et al. 2008]. Phenotypically this results in the progeria syndrome [Korf 2008]. Children with progeria syndrome age very rapidly, look like old men or women at a very young age and present with all conditions related to aging. It is however as yet unknown to what extent the year-long use of ZMPSTE 24-inhibiting PI's may also accelerate the aging process in HIV-infected patients *in vivo*.
The possible relationship between changes in the immune system, side effects of antiretroviral therapy and the emergence of organ dysfunctions is presented in Figure 3 (p. 20).

ACCELERATED AGING

Organ dysfunctions are the cause of comorbidities that are traditionally associated with aging, such as cardiovascular diseases, hypertension, diabetes, deterioration in renal and liver function, osteoporosis with a possibly increased risk of bone fractures and cancer [Effros et al. 2008; Deeks & Philips 2009]. A crucial finding from studies over the past few years is that the frequency of numerous (and possibly all) of the above-mentioned comorbidities is shown to be increased in the presence of HIV compared to the general population. Even after correction for age and other traditional risk factors for each of these comorbidities this difference remains [Patel et al. 2008; Triant et al. 2007; Grunfeld et al. 2009]. Cardiovascular diseases [Triant et al. 2007; Grunfeld et al. 2009] and osteoporosis/fractures [Triant et al. 2008] are for instance more frequent in HIV-infected persons than in the general non-HIV-infected population at the same calendar age. Increased age is a known and signifi-

Figure 3.
Factors that might influence the aging process in the presence of HIV

1 Reactive oxygen species
2 Nucleoside reverse transcriptase inhibitors
3 Protease inhibitors



cant risk factor for these diseases, which implies that the normal aging process might be assumed to develop faster in the presence of HIV and anti-HIV treatment.

HIV AND SOMATIC COMORBIDITY

CARDIOVASCULAR DISEASES

An increased risk of cardiovascular diseases is found in HIV-infected individuals with an untreated HIV infection, a low CD4+ cell count, the use of certain HIV inhibitors, or an increased presence of the traditional risk factors: nicotine use, increased cholesterol levels and high blood pressure [Friis-Møller et al. 2003b; Friis-Møller et al. 2008; Sabin et al. 2008]. Several studies, including the Data collection on Adverse effects of anti-HIV Drugs (D:A:D) cohort study, have shown a prevalence of cigarette smoking among the HIV-positive participants of approximately 60%. This percentage is higher than would be expected among the general population [Friis-Møller et al. 2003a]. In a large international trial interruption of HAART resulted in a higher risk of the development of a myocardial infarction than continuation of HAART [El Sadr et al. 2006].

RENAL DISORDERS

Loss of renal function due to hypertension, diabetes or use of harmful medication, among other things, generally coincides with aging. HIV can cause renal damage and lead to a specific form of HIV-related nephropathy that occurs particulary in people with a high HIV viral load, a low CD4+ cell count and people of black race [Winston et al. 2008]. Persistent virus replication could induce a more rapid decrease in renal function [Longenecker et al. 2009]. Adverse effects of antiretroviral drugs on the kidneys have been reported. Currently, the risk of tenofovir use on kidney damage is being investigated in several large studies [Winston et al. 2008].

CANCER

Some cancer types are more frequent in HIV-infected individuals, mainly as a result of their impaired immune system [Monforte et al. 2008] or the increased presence of certain risk factors. AIDS-related cancer types are: Kaposi's sarcoma of the skin and organs (caused by the human herpesvirus type 8), non-Hodgkin's lymphoma (caused by the Epstein-Barr virus (EBV) and cervical cancer in women (caused by the human papillomavirus (HPV).

Some other types of cancer are more frequent in HIV-infected people, particularly Hodgkin's lymphoma, which is similar to non-Hodgkin's lymphoma (also related to EBV) and may in fact be considered as HIV-associated. Various types of skin cancer are more frequently seen in HIV-infected individuals, partly due to aging and partly due to decreased immunity.

Anal cancer caused by certain forms of HPV is 25-40 times more frequently seen in HIV-positive men.

A recent study showed that the use of HAART was associated with an increased HPV clearance but not with a regression of cervical cytological abnormalities in women with abnormal cervical cytology [Paramsothy et al. 2009]. In addition to cervical carcinoma, vulvar and vaginal carcinoma also occur more frequently and are more aggressive in HIV-infected women [Rojansky & Anteby 1996].

LIVER DISORDERS

The most significant type of liver disorder in HIV-infected patients is chronic hepatitis, caused by the hepatitis B virus (HBV) or the hepatitis C virus (HCV). Both viruses may cause a chronic inflammation of the liver, resulting in liver cirrhosis which generally leads to complete liver failure and death. It is estimated that 6-10% of HIV-infected persons has an active HBV infection [Nunez & Soriano 2005]. Chronic HCV occurs in 10-40% of HIV-infected persons, depending on HIV risk group. Both the chronic HBV and HCV infection develops faster and more seriously in the presence of an untreated HIV infection [Nunez & Soriano 2005; Rockstroh & Spengler 2004]; lower CD4+ cell counts are associated with this deteriorated disease course. Liver cancer may redevelop in a cirrhotic liver after several years, which in itself contributes to the death rate.

Alcohol use strongly increases the risk of liver cirrhosis. Excess body weight and some (HIV) medications also induce fatty degeneration of the liver, which may further stimulate liver fibrosis.

MENOPAUSE

The increased survival of HIV-infected women means that most of these women will reach menopause. There is as yet no consensus about the potential effect of HIV on the onset of menopause. Some researchers feel that the earlier onset of menopause in this group is related to risk factors such as smoking, drug use, being of African origin and a lower educational level. Schoenbaum et al. [2005] found that HIV was independently associated with an earlier onset of menopause in a cohort of 571 HIV-positive women compared to 102 HIV-negative controls. Within the group of HIV-positive women the level of immune suppression, lack of physical activity and recent drug use appeared to be individual factors contributing to a possibly earlier onset of menopause. Earlier onset of menopause also involves an increased risk of certain disorders such as osteoporosis, cardiovascular diseases and increased risk of death [Eastell 2003].

OSTEOPOROSIS

The risk of osteoporosis is three times higher in chronically HIV-infected individuals than in the population at large and may be even higher in patients using protease inhibitors [Brown et al. 2006]. There are many risk factors that accelerate osteoporosis, e.g. a low testosterone level in men [Wunder et al. 2007], lower estrogen levels in women after menopause, alcohol use, vitamin D deficiency [Rodriguez et al. 2009] and insufficient physical activity. Chronic infections also seem to stimulate the development of osteoporosis [De Martinis et al. 2006a]. Apart from the cause, reduced bone mass poses an increased risk for fractures [Seeley et al. 1991].

Caucasian women have a one in six chance of a hip fracture at some point in their lives. This incidence increases exponentially with age. Fracture healing may also be disturbed in HIV-infected people. An altered cytokine environment, a modified inflammatory response and an impaired blood supply of bone may lead to slower or absent healing [Richardson 2008].

Various studies, often cross-sectional, indeed show an increase in osteoporosis in HIV-infected persons, whether they are treated with HAART or not [Brown & Qaqish 2006]. It is unclear whether HAART affects this process, but protease inhibitors and tenofovir have both been mentioned in this respect [Jones et al. 2008; Duvivier et al. 2009; Cazanave et al. 2008]. Large randomised studies are needed to determine the precise significance of these drugs in bone metabolism.

ENDOCRINOLOGICAL DISORDERS

HIV increases the risk of endocrinological disorders like hypogonadism, hypothyroidism, adrenal gland insufficiency, hyperprolactinemia, hypercortisolism, dyslipidemia and diabetes mellitus. All of these endocrinological disorders can affect sexual functioning. Even after the introduction of HAART 20% of HIV-positive persons report testosterone insufficiency, coinciding with complaints like diminished arousability, fatigue, lack of energy, lack of muscular strength and volume. Complaints related to testosterone insufficiency may strongly resemble a depression. Physical examination may show changes in body hair, gynecomastia, decreased testicular volume and muscle atrophy as a result of a low testosterone level [Crum et al. 2005]. The causes of testosterone deficiency with HIV are very diverse and usually related to HIV itself, to changes in lipid metabolism induced by PI or NRTI use, or to hypothalamic (psychological) factors [Crum et al. 2005; Wunder et al. 2008].

Testosterone substitution in case of a demonstrated shortage sometimes leads to recovery of sexual functioning in men and often to a strong improvement in their mood and a partial recovery of their adipose and muscular tissue distribution [Rabkin et al. 2000; Knapp et al. 2008].

In HIV-positive women the duration of their HIV infection, their HAART use, lower CD4+ cell count, wasting and weight loss are associated with low levels of bioavailable (non-SHBG-bound) testosterone (SHBG = Sex Hormone-Binding Globulin) [Mylonakis et al. 2001; Huang et al. 2003].

There is some contradictory evidence suggesting that androgen supplementation in women has positive effects on their well-being, weight and mood [Miller et al. 1998; Choi et al. 2005]. The possible effects of androgen administration on sexual functioning are as yet unclear.

OTHER COMORBIDITIES

Patients who received treatment with the first HIV inhibitor combinations initially developed metabolic problems such as diabetes and lipodystrophy [Carr & Cooper 2000]. The current generation of HIV inhibitors seems to cause fewer problems, although it is important to realise that the two previously mentioned disorders are clearly present and that their frequency increases as patients grow older.

Many HIV-infected people complain of fatigue and a subjective feeling of 'lack of energy', something older people complain about as well. This problem is difficult to measure and a possible common cause is hard to demonstrate. There is some speculation about a chronic inflammatory response that might cause this 'lack of energy' [Swain 2000]. Some form of depression may be an underlying factor to this problem in both aging people and HIV-infected individuals [Avlund et al. 2007; Henderson et al. 2005].

HIV AND PSYCHIATRIC PROBLEMS

COGNITIVE DISORDERS

In most patients antiretroviral therapy controls HIV replication in the brain, thus preventing the development of HIV dementia. As a result, HIV dementia has virtually disappeared in the Western world. Yet there are some recent indications of an increasing incidence of as yet subtle cognitive disturbances in patients successfully treated for their HIV infection [Foley et al. 2008].

Accelerated aging of the brain may occur, resulting from the chronic infection, possibly coinciding with vascular damage or long-term side effects of the medication [Brew et al. 2009; Cysique & Brew 2009].

PSYCHIATRIC DISORDERS

Data from the USA show that depressive disorder (36%) and dysthymia (26%) are the most frequently diagnosed psychiatric disorders in HIV patients. Dysthymia is a psychological disorder, a mild type of depression that is characterised by a lack of enjoyment and pleasure in life. The disorder lasts longer than a major depressive period. Dysthymic patients are often perceived as gloomy, bad-tempered and with no sense of humour, which may lead to social isolation.

An increased prevalence of personality disorders, drug use, alcohol abuse and dependency, adjustment disorders, anxiety, psychotic disorders and sexual disorders was also established [Bing et al. 2001]. Suicidal thoughts, suicide attempts and successful suicides are more frequent in HIV-infected people than in non-HIV-infected people of the same age and in a comparable social and economic situation [Bialer et al. 2008; Komiti et al. 2001]. The presence of premorbid psychiatric symptoms, unemployment, stressful life events and a poor ability to cope, increase the chance of psychiatric symptoms in HIV-infected individuals. Depression in combination with an HIV infection adds to the chance of risky sexual behaviour, drug use, diminished therapy compliance and loss of viral suppression [Olatunji et al. 2006].

People with psychiatric symptoms also have an increased risk of becoming infected with HIV [Catalan et al. 1992]. A highly increased prevalence of HIV was diagnosed among hospitalised psychiatric patients in the USA and Spain, particularly among those concomitantly using intravenous drugs [Naber et al. 1994; Ayuso-Mateos et al. 1997].

HIV-INFECTED ELDERLY WITH PSYCHIATRIC DISORDERS

Very few studies have been published about psychiatric problems in HIV-infected individuals aged 50 years and older. Heckman *et al.* [2002] reported mild to serious symptoms of depression in 25% of a population of HIV-infected patients 50 years of age and older. Goodkin *et al.* [2003] described that episodes of depression are more frequent in HIV-infected people under 50 years of age than over 50 years of age. Mood problems may lead to a strong decrease in sexual desire. Clinically manifest depression occurs in 8 to 20% of men and women with HIV [Ciesla & Roberts 2001; Berg et al. 2004]. Successful treatment with antidepressants often leaves the patient with a sexual dysfunction upon return of his or her sexual needs. This may lead to a relapse of the depression or to diminished therapy compliance. Consequently, in clinical practice a physician should inquire about possible negative effects on sexual function with the use of antidepressants and adjust the medication where necessary [Rosen et al. 1999].

HIV-INFECTED ELDERLY WITH PSYCHIATRIC DISORDERS IN THE NETHERLANDS

Following are some data from the outpatient clinic and knowledge centre HIV and psychiatric problems of the '*GGZinGeest*' and the 'Free University Medical Center' (Amsterdam). In a 2.5-year period (2007-2009) 280 new patients were treated in these centres. Upon admittance, 17% of these patients was between 50 and 60 years of age and 5% over 60 years old. Approximately 75% of these patients had already been HIV-infected for five years or more and 25% of this group had become infected 15 or more years ago.

All of these patients have the same psychopathology, but the cause of their psychiatric symptoms and comorbid social problems often differs. Complicated mourning and depressive symptoms and disorders are most frequently diagnosed. Despite the fact that HIV has been present in the Netherlands since the 1980s, the disease remains surrounded by stigma and discrimination, which contributes to an increased risk of developing and maintaining psychiatric problems.

Feelings of shame and guilt are frequently seen in recently infected patients and pose a risk for the development of depression. Remarkably, these patients were often unaware of the (sexual) risk factors. Patients with a long-term HIV infection suffer from loneliness, isolation and worries about the future. These problems, often accompanied by unemployment and financial concerns, may also cause or intensify psychiatric complaints.

Unpleasant physical side effects of the HIV medication may also negatively affect psychiatric problems. Sometimes these physical problems are difficult to distinguish from somatization disorders (physical problems caused by unexplained psychological problems). Somatization is a difficult diagnosis in HIV-infected people, but it is important to recognise and treat these problems appropriately.

HIV AND SEXUALITY

AGE AND MEDICATION USE

Sexual dysfunctions in HIV-positive men and women are clearly correlated with age [Asboe et al. 2007]. They are not merely caused by the effects of aging itself and the higher incidence of psychiatric and social problems, but also by an increase in comorbidities and by the more frequent use of medication which negatively affects the sexual functions. Compared to the general population HIV-positive individuals make more frequent use of the many medications that may negatively affect sexuality on different levels: sleeping pills, tranquillizers, psychopharmaceuticals, antidepressants, anti-hypertensives, cholesterol-lowering drugs, and antacids, among others.

PSYCHIATRIC COMPONENT

Most of the sexual problems in HIV-infected men and women have a primary or secondary psychiatric component. Most studies conclude that psychiatric and social factors – even more in women than in men – generally play a more important role than the immediate physical effects of HIV and HAART [Florence et al. 2004; Bell et al. 2006; Cove & Petrak 2004]. The HIV diagnosis has changed the meaning of sexuality; something that used to be lustful has turned into something dangerous. There is fear of infecting an HIV-negative partner and/or there are feelings of guilt and shame about the sexual behaviour that has caused the HIV infection.

Single elderly men and women in particular become much less accessible to sexual situations. Problems of loneliness are significantly more frequent in older homosexual, lesbian and bisexual adults than in the heterosexual population [Fokkema & Kuyper 2009].

EFFECTS OF HAART

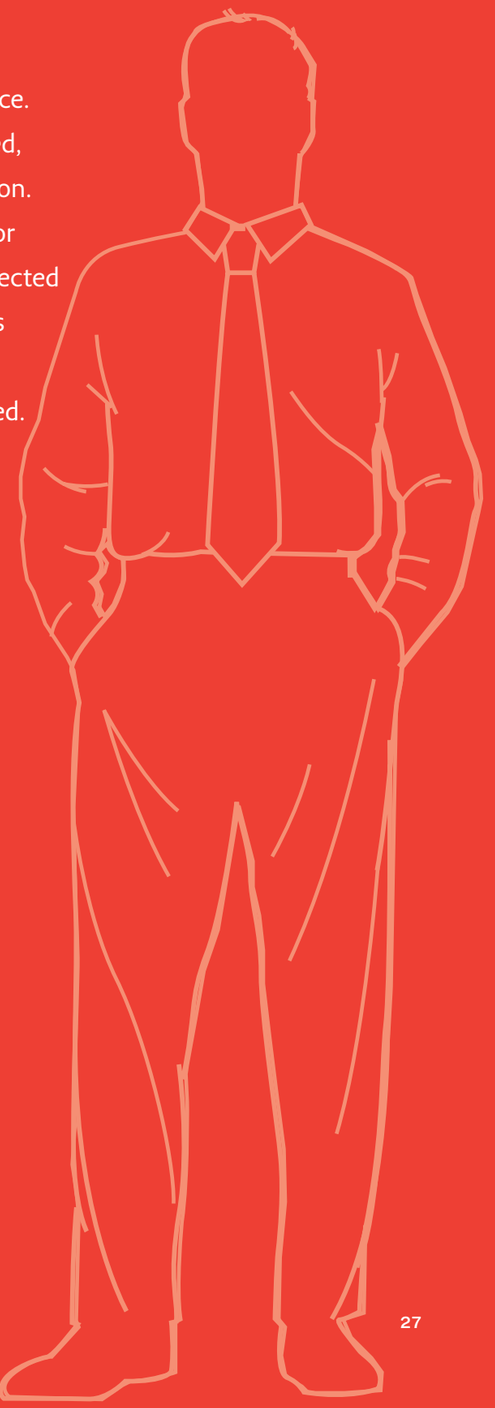
Treatment with HAART, particularly with PI and NRTI may cause changes in fat distribution (lipodystrophy) in both sexes which in many cases leads to negative changes in body image and self esteem that can contribute to sexual problems due to a feeling of diminished attractiveness [Guaraldi et al. 2007; Luzi et al. 2009; Corless et al. 2004). In practice this problem seems to primarily occur in subpopulations with a more than average dependence on appearance in relation to self esteem and sexual behaviour.

HEALTHCARE WORKERS

Healthcare workers tend to avoid the subject of sexuality especially with people who are chronically ill, despite the strongly increased prevalence of sexual problems in this group [Nusbaum & Hamilton 2002; Solursh et al. 2003]. Many patients in turn refrain from asking questions, or only talk indirectly about sexual issues, due to feelings of shame or embarrasment or for fear of being a burden to the healthcare worker, which further reinforces this situation [Nusbaum & Hamilton 2002; Solursh et al. 2003]. In case of HIV, healthcare workers have a lower tendency to actively discuss sexuality, other than merely in terms of 'safe sex', than in other medical situations, although HIV-infected individuals of all ages seem more susceptible to developing sexual problems [Platteau & van Lankveld 2005].

A 56-YEAR-OLD HOMOSEXUAL MAN

He has been HIV-positive for 18 years and has had AIDS; this has left him with amnesia and a balance disturbance. After the death of his partner he became very depressed, neglected himself and did not always take his medication. He then suffered a small stroke that caused some minor disabilities. He moved to an assisted living facility connected to a nursing home with HIV expertise. There he receives help with his daily functioning and gets support from two buddies. He has a dog, even though it is not allowed. He goes out and brings men home for sex. His co-inhabitants do not tolerate it and his visitors are frightened of by his living conditions.



CARE FOR ELDERLY PERSONS WITH HIV

HEALTHCARE WORKERS

NECESSARY COORDINATION BETWEEN HIV CARE AND GERIATRIC CARE

Literature shows the importance of treating the elderly, including elderly persons with HIV, as individuals with their own background, social status and expectation for the future, rather than as a homogeneous group. HIV care and geriatric care are two separate entities in the Netherlands.

Healthcare workers in the field of HIV are insufficiently aware of the specific aid and care services for elderly people, have insufficient knowledge of general (medical) problems in the elderly and are not abreast of the latest developments. And vice versa, healthcare workers in geriatric care in the Netherlands are not abreast of HIV – not just of the medical aspects but also of the social aspects and consequences for the HIV-infected patient. It is to be expected that HIV-infected persons, once they become part of the geriatric care system, will be confronted with the stigma they already regularly experience right now. There is a lot of prejudice mainly based on ignorance about specific groups of people with HIV: homosexuals, (former) drug users and non-native Dutch citizens. Problems may arise as soon as these people start making use of the aid and care services for the elderly.

TASKS OF THE HIV/AIDS NURSE CONSULTANT

Since 1995, the HIV/AIDS nurse consultants have been the key figures in HIV care in the Netherlands. They usually have contact with their patients for many years and have developed a basis of trust. They provide good social support in addition to care and compliance monitoring. Over the last ten years their duties have changed from providing terminal care to being HIV case manager, and, due to the added complications (multimorbidity), they have also gained a lot of knowledge about diseases like diabetes and osteoporosis. It is therefore a logical next step to also give the HIV/AIDS nurse consultant a coordinating task in the care for aging patients with HIV.

Elderly persons more often struggle with issues like loneliness, mourning and sexuality. According to the literature [Chesney et al. 2003; Mack & Ory 2003; Wilkie et al. 2003; Wutoh et al. 2003] these issues should also be discussed during consultations with the HIV/AIDS nurse consultants and treating physician. Considering all additional medical and social problems, it is advisable to arrange more regular check-ups for the aging person with HIV. A good care coordination among HIV specialist, general practitioner, district nurse, patient, and HIV/AIDS nurse consultant requires a transmural care setting.

ADDITIONAL TRAINING

Regular nurses will need additional training before they can begin to fulfil their new tasks. In the Netherlands, this training can be provided through the so-called masterclass+, which was established in 2009 as an addition to the basic masterclass HIV/AIDS for nurse consultants, with topics such as aid organisations for the elderly, facilities, medical devices and regulations, psychiatric and sexual problems in the elderly and the possible influence of HIV.

The authors of *Aging with HIV* recommend including information on HIV in the training for geriatric care providers. When geriatric care for an HIV-infected elderly person is needed, the relevant organisation and care workers will thus have sufficient knowledge about HIV – not just about the disease itself, but also about all the other aspects involved.

CARE PROVISIONS

ADJUSTED CARE PROVISIONS

As in general geriatric care, it is important for HIV-infected elderly persons to be able to stay in their own home for as long as possible with support from district nurses, meal services, buddies, the general practitioner and social workers [Emlet et al. 2004; Chesney et al. 2003]. Protected housing and homes for the elderly will require specific aid and care provisions and comfortable and safe dwelling conditions. Refuge for homosexual men, (former) drug users and non-native Dutch citizens in the Netherlands can be realised in close collaboration with the existing support organisations in the Netherlands.

PERSONAL EXPERIENCE

AN HIV-POSITIVE MAN WITH HAEMOPHILIA

The HIV-infected population is much more varied than other groups of chronically ill people. One person may be very open about his or her HIV status, another person may decide not to want to talk about it for fear of repercussions. HIV-infected haemophilia patients are a special group as they are exposed to more comorbidities due to their disease combination. When these patients are additionally confronted with geriatric diseases as they grow older, a very complex situation arises.

Haemophilia patients are regularly confronted with the lack of coordination between the various healthcare workers; with polypharmacy, i.e. the simultaneous use of multiple medications for multiple diseases; and with the 'fear factor', the feeling of having no control over their own treatment.

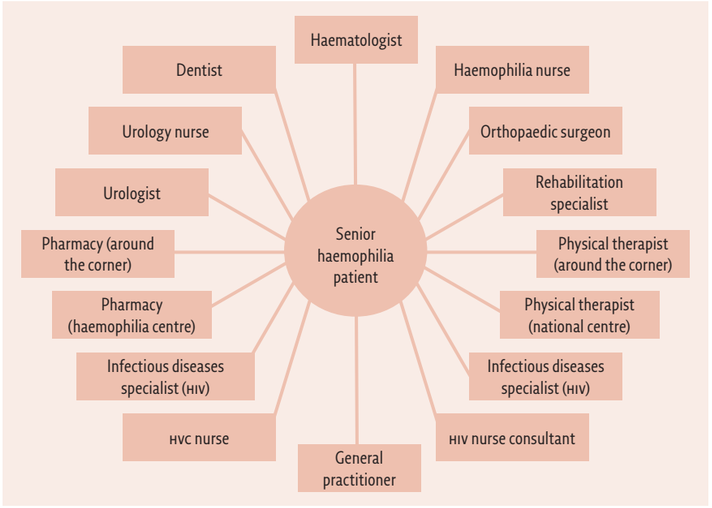
CARE COORDINATION

Figure 4 (p. 30) shows the circle of contacts of a senior HIV-positive haemophilia patient with his healthcare providers.

The most difficult aspect for healthcare users is the fact that nobody in the professional course supervises or coordinates the care. It is more or less taken for granted that the patient him- or herself oversees and plans the care he or she needs, yet there are situations in which the patient is unable to do so. This coordination problem becomes even more complex when an elderly patient with one or more chronic diseases needs to be admitted to a nursing home or a home for the elderly. These institutions generally cannot provide the specific care that is needed for the patient's chronic illness, comorbidities or complex underlying emotional problems as the physicians and staff have been trained in different areas.

Medically speaking, the patient will be introduced to yet another and new genera-

Figure 4.
The haemophilia patient's contacts with healthcare providers



tion of physicians and care providers who are not or hardly familiar with his or her often complex medical and personal history. Moreover, all this will probably take place in an environment and under circumstances that make it difficult for the patient to remain assertive and keep control of the treatment for his or her illness. A first step in preventing complications is presented in the 'Practical advice for HIV/AIDS patients with comorbidity and their care providers'.

QUALITY OF CARE

People with a chronic illness will eventually have a lower income; HIV-infected elderly persons will therefore not always be able to afford the high-quality health care they need. Moreover, the Dutch government is gradually transferring the control for independent living and healthy aging to the individual citizen, while the organisation for care, housing and welfare is at the same time being decentralised. This obstructs the development of adjusted care for the HIV-infected elderly.

A 61-YEAR-OLD HOMOSEXUAL MAN

He has been HIV-infected for 26 years now. His first life companion died of AIDS in 1984. Around that same time he lost about ten friends and acquaintances. He himself was admitted into hospital a few times with opportunistic infections, the antiviral medication came just in time. It took him years to get used to the idea that he was not going to die of AIDS.
Recently he was diagnosed with anxiety disorder and sexual dysfunction. He also suffers from many other unexplained physical symptoms. He receives behavioural therapy from a psychotherapist and a social-psychiatric nurse has encouraged him to do some volunteer work. She assisted him in finding help for his debt problems. As he started to feel better after a few months, he also became more motivated to take his antiviral medication.

HOW TO PREVENT COMPLICATIONS?

PRACTICAL ADVICE FOR HIV/AIDS PATIENTS WITH COMORBIDITY AND THEIR CARE PROVIDERS

Some advice can be given to HIV/AIDS patients with multiple chronic diseases and their partners that may prevent some – but maybe not all – complications. Useful suggestions that could be given by patient organisations or HIV/AIDS nurse practitioners are:

1 Become a member of an HIV/AIDS patient group and of one or more patient organisations that deal with your most important diseases, read their information and surf the Internet.

2 Stay in regular – at least once or twice a year – contact with the medical or nursing staff of your HIV/AIDS treatment centre and, if applicable, of your other treatment centres as well. Although there may be no acute medical reason, it is useful to know them and to be up-to-date about practicalities like changes in emergency telephone numbers.

3 Always inform a physician or paramedic you need to see about a medical problem that may not be directly related to your HIV/AIDS diagnosis about your HIV status. Always let them know that your HIV/AIDS treating physician must be contacted to discuss the treatment that you need. For your own safety, it is advisable to personally contact your specialist as well to make sure that everything in relation to your treatment has been properly coordinated.

4 Instruct your partner or family members to inform your HIV/AIDS treating physician or HIV/AIDS nurse consultant in case you are hospitalised in another hospital due to an emergency situation. It is also sensible to wear a Medic Alert bracelet or pendant with your medical data and an up-to-date telephone number or an ICE (= In Case of Emergency) number that can be used in case of an emergency. If you have a mobile phone, enter the telephone number of your HIV/AIDS treatment centre in your contact list.

Carrying a USB-stick – Medstick® – with your medical data is a new and sophisticated way to ensure that you always have all your medical information with you. Your medical data can be available in different languages (www.cinsol.nl).

5 If you are admitted to a different hospital department, be aware that the hierarchy in the hospital may cause coordination problems. In most hospitals the physician and other healthcare staff responsible for your daily care will only work in that particular department and may not be very familiar with the treatment of HIV/AIDS or other diseases.It is therefore advisable to discuss your health situation as soon as possible after admission. Also, tell them about your fears and worries.

6 It is always wise to think in advance of what needs to be organised to ensure that you receive adequate medical care in case of a hospital admission. It is also advisable to tell your partner, friends or family members what you want them to do in case of an emergency. In addition, you may want to write down a brief list of instructions.

7 The same actually applies to your end-of-life and funeral or cremation or farewell reception wishes. Discuss this with your treating physician or general practitioner, if necessary, and with one or more of your relatives or loved ones, or have it notarised, together with your will.

SPECIFIC PATIENT GROUPS

SUBGROUPS

Within the Dutch HIV-positive population the following main subgroups can be identified: homosexual men, women, non-native Dutch citizens, (former) drug users and haemophiliacs. Even though there are large individual differences within these subgroups, some central points can be formulated that apply specifically to each of these groups.

OLDER HOMOSEXUAL MEN WITH HIV

In the Netherlands very few data are available about the influence of HIV/AIDS on the lives of older homosexual men. The situation of men who were infected before or after 1996, when HAART became available, is very different. However, no Dutch research on the medical, psychosocial, emotional or financial effects of the HIV infection in these groups has been performed.

PSYCHOSOCIAL PROBLEMS

The psychosocial influence of HIV/AIDS on the current generation of infected elderly persons should not be underestimated. Before 1996 many of them expected to die soon; some took out big loans, others spent their savings. The perspective of these people, who had come to terms with the fact that their lives were coming to an end, changed dramatically with the introduction of HAART. When they stayed alive, they ran into financial problems that some are still dealing with [Verdult 2004].

Psychosocial problems may lead to alcohol and drug dependence. Older homosexual men no longer feel at ease in the gay scene as they feel that they are no longer considered as attractive life companions or sex partners. The lives of some become isolated and lonely [Warren 2003; Verdult 2004].

SEXUALITY

Sexual expression is very important for many older homosexual men, but HIV-infected homosexual men more often suffer from sexual dysfunctions than men without a (known) HIV infection and often have multiple sexual problems [Mao et al. 2009; Platteau et al. 2005]. Consequently, older HIV-infected homosexual men frequently have less sexual enjoyment.

Even though a lot of attention is given to the sexual health of HIV-infected homosexual men in the Netherlands, the HIV-infected elderly seem to be forgotten. Care providers who are often confronted with (elderly) HIV-infected homosexual men need to have knowledge of elderly persons and sexuality in addition to their knowledge of gay lifestyles and (living with) HIV.

CARE

Since the late 1980s the Buddy Project has been running in the Netherlands. Buddies – volunteers who maintain contact with HIV-infected patients – may be able to help find the way in the maze of social and (para)medical services. If this type of volunteer aid has to deal with the growing group of elderly HIV-infected homosexual men more volunteers, more time and more money are required. Within the gay scene itself there is a lack of solidarity with elderly HIV-infected homosexual men. This could be counteracted by setting up discussion groups and contact and support networks.

The institutions for regular geriatric care should also make allowance for their HIV-infected homosexual clients. Homosexuality often still is a taboo within these institutions and openness about HIV is lacking. If both staff and co-occupants are properly informed about HIV and HIV-related problems this should lead to respectful contact and tailored care.

Elderly HIV-infected homosexual men prefer going to a healthcare centre specifically geared towards HIV-infected individuals. This wish seems to stem from dissatisfaction with the general practitioner, psychiatrist, psychologist and social worker who are insufficiently abreast of (issues involved in aging with) HIV. They have a need for a safe environment with congenial companions. Experiments with special housing facilities are underway in the Netherlands.

OLDER WOMEN WITH HIV

The female HIV-positive population in the Netherlands can be divided into two large groups: Dutch women and women originating from sub-Sahara African (SSA). Both groups are aging – not only as a result of a longer survival with HAART, but also because of the influx of new older patients. Due to high-risk behaviour and unsafe sex there is an increase in the number of new patients of 45 years of age and older in both the Dutch and the SSA group. In non-pregnant older women there is a greater risk of a relatively late HIV diagnosis.

PSYCHOSOCIAL PROBLEMS

HIV-infected women in the Netherlands prefer not to talk about their illness with others; they do not attend discussion groups, nor do they go to support institutions. Many times the partner or a close relative, the general practitioner, treating internist and/or nurse are the only close contacts who are aware of this situation. And as long as the HIV infection or its treatment does not create complications that interfere with the patient's daily life, these women successfully manage to go on without any specific help.

SEXUALITY

Contrary to what is often thought, more than half of the women over 50 is sexually active. Female sex tourism in West Africa is very popular among white women. Yet there is no information for elderly women about high-risk behaviour and safe sex. Moreover, older women appear to be less able to negotiate safe sex practices [Zablotsky & Kennedy 2003].

Older women no longer need the use of a condom for contraception, and men who have an erectile dysfunction often hate condoms. Older women who are often single after a divorce or the death of their husband have a lot of spare time. And thanks to agents like Viagra they can rediscover their sexuality with male partners. The mu-

A 69-YEAR-OLD WOMAN

Her husband died of AIDS two years ago. Nobody in the hospital considered that diagnosis until three weeks before his death. She then also wanted to be tested and she turned out to be HIV-positive. Since the 1980s she had known that her husband also had homosexual contacts. When he was finally diagnosed with AIDS she was left with the problem of her own infection. Her seven grown-up children were angry that she had never told them about their father's homosexuality.

She doesn't have to take as many pills as she used to but she does have to visit the hospital every four months for a checkup. And she also picks up her medication there. Because she knows the girl that works in the local pharmacy. And this girl doesn't need to know.

cous membrane of their vagina is dryer after menopause and therefore more vulnerable to small wounds and transmission of HIV [Sormanti & Shibusawa 2007].

The current safe sex campaigns do not seem to be geared towards the over 50 population; many elderly people think that HIV will only affect younger people. The institutions in charge of prevention of sexually transmitted diseases should give attention to this issue.

FEMALE-SPECIFIC DISEASES

The development of age-related comorbidities in HIV-infected women over 50 years of age, such as diabetes, osteoporosis, renal insufficiency, liver cirrhosis and cardiovascular diseases, can interfere with physical functioning. Specific problems that can occur in these women are a possibly earlier onset of the menopause and menopausal symptoms, an earlier onset and aggravation of osteoporosis, and a possible increase in female malignancies, such as vulvar and cervical carcinoma. Repeated cytology screening for cervical carcinoma seems to be desired.

OLDER MIGRANTS WITH HIV

Very little research has been conducted on older HIV-infected migrants in the Netherlands; they are difficult to contact and hard to define as a group. The number of older HIV-positive migrants is still limited; the largest group is between 40 and 49 years old. For *Aging with HIV* ten HIV-positive migrants of Caribbean (Surinam, the Dutch Antilles) and sub-Sahara African descent were interviewed in 2009: three women and seven men between 45 and 53 years of age. Two of the men are men who have sex with men (MSM). Some impressions from these interviews follow below.

PSYCHOSOCIAL PROBLEMS

HIV-positive migrants in the Netherlands, immigrants from sub-Sahara Africa in particular, mostly suffer from psychological problems that manifest themselves in behavioural problems. The causes of these problems are easy to identify: cerebral damage (caused by HIV and/or other infections); psychiatric syndromes such as schizophrenia, depression and personality disorders; the rather hopeless situation of living in a nursing home for young adults; reverting to, or wanting to revert to the excessive pattern of drug or alcohol abuse.

A major problem for HIV-positive migrants are the conditions of their residence permit. Migrants whose permit was issued on medical grounds are legally not allowed to work. Another factor that has a big impact on their daily life is the fear that their HIV status will become known. Primarily for this reason many migrants do not want to participate in support groups. Healthcare workers confirm this fear and have examples of migrants who were evicted from their homes because of their HIV status. The HIV nurse consultant often is the only person the migrant can talk to about HIV.

PHYSICAL PROBLEMS

All interviewed migrants are in poor health and suffer to some extent from physical problems: neuropathy, continuous diarrhoea, muscular pains, changes in physical appearance, changes in mobility, depression and psychological changes. Older migrants suffer from osteoporosis, hypertension and diabetes.

According to some healthcare workers these problems are further intensified by the migrants' lifestyle, for instance their obesity, which they perceive as a status symbol, and the eating of high-fat foods. Healthcare workers sometimes prescribe food supplements to make sure their patients get the right nutrients. They also report that some sub-Sahara African migrants have a different concept of health. One HIV nurse consultant reports how he needs to explain, time and again, that the use of medication should be continued, even when the patient starts to feel better.

Another frequently mentioned problem concerns the physical side effects of the medication. Many migrants feel that the medication is deforming their body, but that these effects are not always taken seriously by the care providers. Care providers point out that these effects were seen in the past but are less common with the current medications.

CARE

HIV-positive migrants consider themselves the dregs of society; they are unable to find a job and build a future. Their insecure position in the Netherlands keeps them from contemplating growing old. Their primary concern is their fear of having to leave the Netherlands: if they are evicted they will soon die as the medication they need is hardly available in their country of origin and the quality of health care is poor. Yet in the Netherlands they miss their relatives who would otherwise be able to take care of them when they grow older. And if they do grow old enough to go to a home for the elderly, they expect to be among the poorest.

OLDER HARD DRUG USERS WITH HIV

A rough estimate shows that in 2007 the number of problem hard drug users in the Netherlands was about 33,500. Their average age is (largely) over 40 years; 80% of them is male. There are 617 registered HIV-positive individuals who very probably were infected via injecting drug use, though unsafe sex as cause of HIV does also occur among hard drug users.

The population of hard drug users is aging. Due to their lifestyle and drug use they suffer from geriatric diseases at an earlier age, which makes them a highly complex multimorbid patient group.

PSYCHOSOCIAL PROBLEMS

The number of hard drug users living on the streets in the Netherlands is declining. They are gradually moving to relief centres and some find independent housing. But all are relieved when they are able to distance themselves from their criminal past and from causing trouble. Many drug users have worked their way up from the bottom.

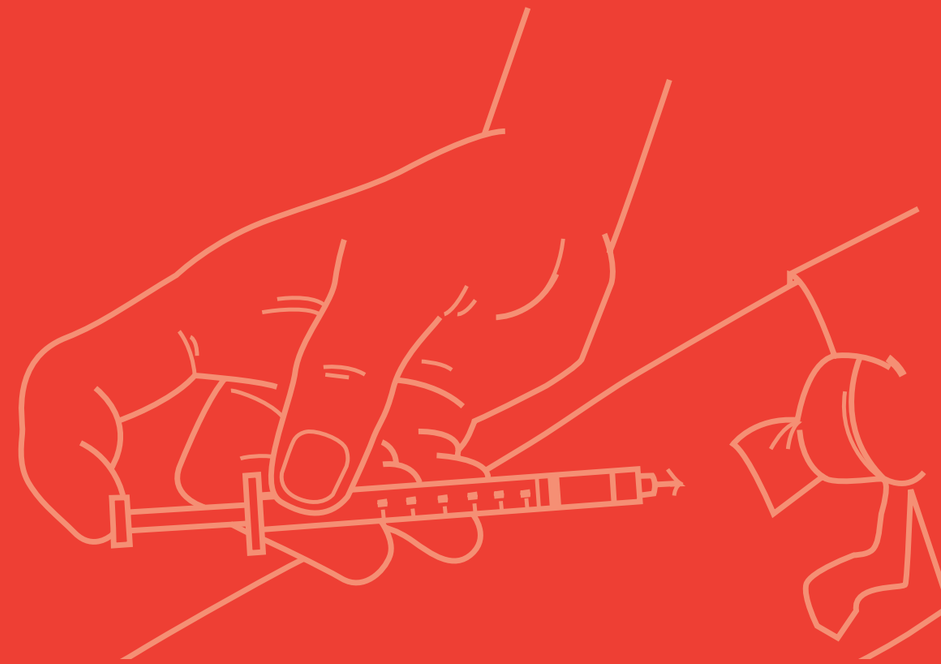
PHYSICAL PROBLEMS

Older hard drug users have aged rapidly due to their chronic drug and alcohol use and a lifestyle that negatively influences their health. Almost all of them also smoke tobacco, usually strong rolling tobacco, and they regularly substitute their heroin or methadone for substantial amounts of alcohol.

Symptoms that are often seen in this group are rheumatic disorders, worn verte-

A 48-YEAR-OLD HARD DRUG USER

He has been sick for more than 18 years. When he was thirty years old he was told that he was HIV-positive, probably due to his intravenous drug use, the sharing of needles and materials whilst living on the streets. At a certain moment he had pneumonia and attacks of very high fever. His blood was tested: he had full-blown AIDS. Moreover he got TB, that was hell. He had mood swings and felt lonely, alone and deserted. He used more drugs than ever before, 500 mg methadone. And he also smoked heroin, because he could no longer use a needle. Now he lives in a shelter, he takes his medication on time and he tries to make something of his life.



brae, knees and hands, and hepatitis c co-infections. Infection with HIV may contribute to accelerated aging due to the impairment of the immune system. In addition to physical complaints related to aging older hard drug users have a higher tendency toward depression. Their life has been difficult, they are psychologically tired.

Good counselling is very important in the treatment of hard drug users and in motivating them, as therapy compliance is a bottleneck in this group.

CARE AND TREATMENT

The somatic, psychological and social limitations of aging HIV-infected hard drug users need to be taken into consideration in their care. This is probably too difficult a task for regular nurses and care providers and requires highly professional and specific care. This multidisciplinary care should also be properly coordinated. Specific attention should be given to, among others, building trust, respectful treatment, home visits, a suitable care location, and caution when taking blood samples as some users are frightened of the needle and their veins may be difficult to access.

Easy access to HIV specialist and HIV/AIDS nurse consultants is very beneficial in the treatment of this group of patients. These professionals play a crucial role with regard to support, therapy compliance, motivation and trouble-shooting. Additionally, it would be advisable to employ care providers in rehabilitation hostels for hard drug users. Aging HIV-positive drug users tend to have many physical problems and specially trained care providers may be able to give some extra support and attention whenever necessary.

OLDER HAEMOPHILIA PATIENTS WITH HIV

LOWER LIFE EXPECTANCY

Sixteen percent of the haemophilia patients in the Netherlands became infected with HIV in the 1980s. Most of them were patients with severe haemophilia who received intensive treatment with clotting factor replacement therapy. Currently, the total number of HIV-infected haemophilia patients in the Netherlands is probably a little more than fifty. However, as there is no national registry the exact data are lacking. Yet it is clear that the life expectancy of HIV-infected haemophilia patients is shorter than that of haemophilia patients without viral infections, namely 67 years versus 74 years [Plug et al. 2006]. As no new infections have occurred since 1985, it is to be expected that there will be no more HIV-infected haemophilia patients in the Netherlands in about forty years time.

PHYSICAL PROBLEMS

HIV-infected haemophilia patients always have comorbidities. They mostly suffer from haemophilic arthropathy; 80% is co-infected with HCV. This group of patients therefore needs special care, particularly when geriatric diseases such as prostate problems or cancer start to occur.

CARE AND TREATMENT

Special care for this group of aging HIV-infected patients is required and care coordination is essential. A central role can be played by the haemophilia treatment centre (HTC). As correction of coagulation is always needed prior to examinations and when starting treatment, the haematologist of the HTC should be consulted for every patient. The risk of bleeding during an examination or treatment needs to be weighed against the benefits of this treatment. If a haemophilia patient is admitted for HIV-related complications, the treating physician should be notified immediately. Many older haemophiliacs have negative experiences of admission to a hospital and like to control their own treatment. If they are told that their own treating physician will be involved in their hospital treatment this may prevent a lot of stress and be beneficial for their recovery.

FUTURE CARE FOR ELDERLY PERSONS WITH HIV

POLICY OF THE DUTCH GOVERNMENT

The Dutch government's policy is aimed at individuals, not at specific target groups. In other words: this policy should provide sufficient opportunity to realise adjusted care for each HIV-infected elderly person. Considering the wide-ranging need for care among HIV-infected elderly this policy can therefore be regarded as adequate. The bottleneck, however, lies in the fact that optimal use of this system requires elderly persons to be able to cope independently. The question then is how elderly persons – who are no longer able to fend for themselves – will be able to maintain themselves. And a second question is whether the healthcare services can reorganise in order to meet the needs of the elderly who are no longer able to cope. The frail elderly with HIV will need integrated care. It is doubtful whether and, if so, when differentiation of the need for and type of care can be established.

'HEALTH CARE FOR THE ELDERLY WITH MULTIMORBIDITY' REPORT

The report of the Health Council of the Netherlands, *Health care for the elderly with multimorbidity* (2008) [Gezondheidsraad 2008], sets professional care providers the task to develop these four areas:

- timely identification of health risks in the elderly related to multimorbidity;
- the management of an integrated provision of care for home dwelling elderly with multimorbidity;
- the provision of diagnostic and therapeutic advice to the general practitioner and home care nurses by medical specialists;
- the application of scientific knowledge about complex multimorbidity within the clinical setting.

This report advocates to improve the availability and accessibility of information. Additional objectives of the policy for future geriatric care are stimulation of training and scientific research, setting up planned regional care pathways and establishing effective coordination. Finally, the Health Council wants to inventory the effects of polypharmacy. The issues raised in this report regarding the elderly in general also apply to HIV-infected elderly. Early detection and treatment of comorbidities in particular may yield a profit.

EARLY DETECTION OF HEALTH RISKS: SCREENING

In the aforementioned report the Health Council of the Netherlands states that early detection of loss of physical, psychological and social functioning in elderly patients at risk of multimorbidity is mandatory. For HIV-infected elderly persons this does not entail a significant change from the current policy. HIV care has changed in many respects in the past decade. Attention is being given to early detection and early treatment of diabetes, hypertension, osteoporosis and loss of renal function. As some of these disorders can manifest themselves in HIV-infected persons at a relatively young age, early screening is desired.

PHARMACOLOGICAL ASPECTS

For many drugs there is a relationship between plasma drug concentration and efficacy and toxicity. This is also true for anti-HIV medications. Yet data on the pharmacokinetics and pharmacodynamics of anti-HIV medications in elderly persons is lacking. And as the pharmacology of other drugs is known to be different in elderly people it is fair to assume that this will also hold true for anti-HIV medications. As a consequence it is possible that the occurrence of toxicity and treatment failure is higher in elderly HIV-infected people. Pharmacological studies of anti-HIV medication in the elderly is therefore urgently needed [Flexner 2009; Rhee & Greenblatt 2008].

Another important factor in relation to aging and multimorbidity is polypharmacy [Schwartz 2007]. Physicians involved in the treatment of HIV-infected patients will have to be even more aware of drug interactions in case of elderly patients. Therapeutic drug monitoring (TDM) will therefore become more important in the future as well as the role of the pharmacist who will need to keep track of the different prescriptions from different physicians for one single patient.

CHANGING CARE FOR THE ELDERLY WITH HIV

SPECIALIST CARE

The treating HIV specialist (internist-infectiologist) and HIV/AIDS nurse consultant do not merely focus their attention on specific HIV-related problems, but increasingly also on other medical problems [see table 2].

HIV-RELATED	OTHER COMORBIDITIES
Diagnostics and treatment of opportunistic infections	Diabetes mellitus type 2
Diagnostics and treatment of the HIV infection	Dyslipidemia
Monitoring and adjusting the medicinal HIV treatment	Hypertension and other cardiovascular diseases
Development of resistance	Osteoporosis
Drug interactions	Osteoarthrosis
Diagnostics and treatment, c.q. coordination of treatment of HIV-related malignancies	Loss of renal function and renal insufficiency
Treatment of hepatitis B and hepatitis C	Hepatic disorders
Sexually transmitted diseases prevention, diagnostics and treatment	Non-HIV-related malignancies
	Cognitive deterioration

Table 2.
Areas for attention in the treatment of HIV-infected elderly persons

The multidisciplinary treatment of HIV will be broadened further in the future. A larger number of specialists will become involved in the treatment of HIV-infected persons and (sub)specialists who at this time are only seldom involved in the treatment of this patient group will more regularly have to perform medical examinations and interventions. For example treatment of malignancies will require collaboration

between organ specialists, surgeons, oncologists and radiotherapists. Cardiovascular specialists such as (intervention) cardiologists, intervention radiologists and cardio(pulmonary) surgeons will also increasingly become involved in the treatment of patients with HIV.

GERIATRIC CARE MANAGEMENT

If the HIV-infected patient needs to manage the disease him- or herself, or if this management is transferred to a case manager, a range of care options needs to be available that the patient or case manager can choose from.

Approximately 30-40% of the HIV-infected elderly requires only limited specialist care. These patients could thus be integrated into the regular healthcare system as long as regular care providers dispose of sufficient knowledge. General practitioners should be sufficiently qualified and experienced in HIV care and treatment to address the specific problems of these elderly patients. First-line care providers would need to dispose of the possibility to obtain treatment advice from the various specialists.

Other elderly HIV-infected patients will need more specific care, to be provided by the HIV treatment centres, or may live in areas where the regular care circuit is not equipped to care for this special group of patients. The 25 HIV treatment centres in the Netherlands may join the regional geriatric care collaborations.

The extent of specialisation in geriatric care in the regular care circuit will depend on the number of HIV-infected elderly patients in each service area. HIV/AIDS nurse consultants will play a more important role in monitoring the medical care for HIV-infected patients for which they have received additional training.

HEALTHCARE POLICY AGENDA

CARE INNOVATION

In the Netherlands – as probably in most other countries – there is little cohesion between healthcare policies for the elderly and for the chronically ill. This poses a problem, particularly for chronically ill people aged fifty to about seventy years. The primary concern for elderly HIV-infected persons is that multidisciplinary care becomes better geared towards their specific situation.

For some HIV-infected elderly people multimorbidty causes such problems that they are no longer able to function independently. They need support, for instance from transmural HIV/AIDS nurse consultants, to enable a good transition to a nursing home or home for the elderly that can offer them all the care they need. Others will be able to continue to live autonomously, supported by tailored care.

STIPULATIONS FOR A NEW POLICY

A new policy is clearly needed and can only be realised if all preconditions in the field of advisory services, prevention, training, screening, treatment, organisation and financing, are met.

Broadening of the treatment team, in which the HIV treating physician will be the primary physician, together with adjustments to the aging population in the HIV outpatient clinic will be required. The new organisational structure will be based on expansion of the outpatient clinic capacity, local outpatient clinics connected to HIV centres for (former) drug users, trial projects to test new outpatient clinic structures and collaborations with first-line health care, in particular with general practitioners specialised in HIV.

The care and support for elderly HIV-infected persons needs to be expanded. The personnel capacity in nursing homes needs to be increased and psychogeriatric provisions need to be extended. Specially adapted housing for specific groups of elderly HIV-infected persons needs to be established. HIV-infected migrants and former drug users have to be acknowledged as groups wih special needs.

A 46-YEAR-OLD MALE IMMIGRANT

I am not the man I used to be; I used to be a tiger, now I'm a leopard. The tiger is stronger than the leopard. I was able to have more than one wife, I could take care of them, financially and sexually. But now it hurts when I have sex ... my body aches ... because of HIV. And I feel very tired. But I'm only 46. It isn't normal. It's because of the medication, and because of HIV. HIV upsets my motivation. Life is not the same anymore.

AGING WITH HIV – HEALTH AND DISEASE OF AGING PATIENTS: AN OVERVIEW

[OUD WORDEN MET HIV- GEZONDHEID EN ZIEKTE VAN OUDERE HIV-PATIËNTEN: EEN INVENTARISATIE]

Editors: Cees Smit, Kees Brinkman, Kees Rümke and
Annemarie de Knecht-van Eekelen

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