Adherence to HAART

A study of patients' perspectives and HIV nurse consultants' strategies

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Thesis University of Utrecht, The Netherlands, including a summary in Dutch

ISBN: 978-90-393-5212-0

Cover Martijn Visser
Lay-out Roy Sanders
Printed by Gildeprint Drukkerijen B.V. Enschede, The Netherlands

Adherence to HAART
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Therapietrouw aan HAART
Een studie naar het perspectief van patiënten en de strategieën van verpleegkundig consulenten HIV.

(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit Utrecht op gezag van
de rector magnificus, prof.dr. J.C. Stoof, ingevolge het besluit van het college
voor promoties in het openbaar te verdedigen op donderdag 19 november 2009
des ochtends te 10.30 uur

door

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geboren op 2 augustus 1967 te Wilrijk, België

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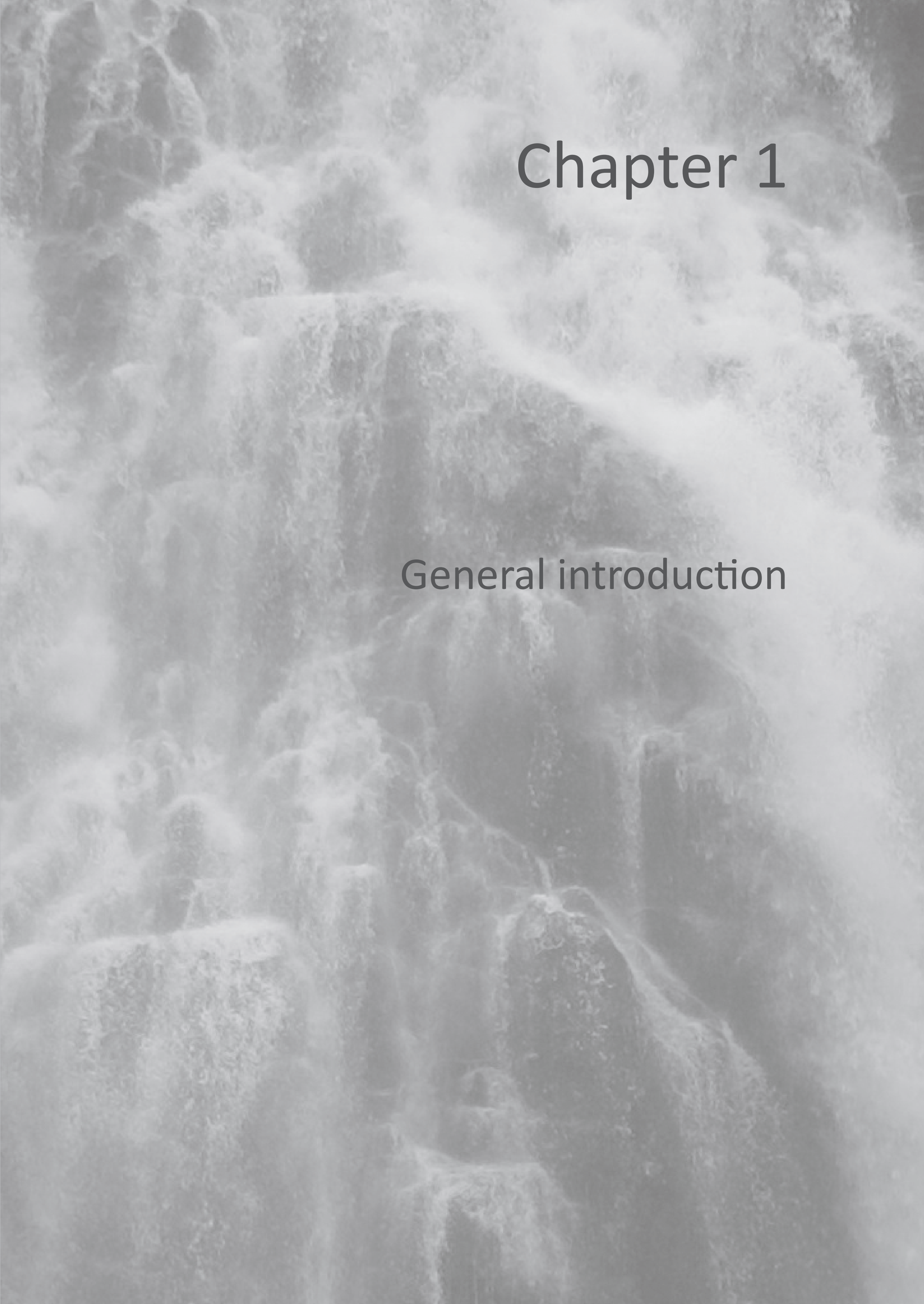
Abbott BV, Boehringer Ingelheim BV, Jansen-Cilag BV, Gilead BV, Glaxo Smith Kline BV, Merck Sharpe & Dohme BV, Pfizer BV and Roche BV financially supported the printing of this thesis.

Contents



Chapter 1

General introduction

Introduction

The human immunodeficiency virus (HIV), discovered in 1984, is a retrovirus that is responsible for the development of the acquired immunodeficiency syndrome (AIDS). HIV primarily infects CD4+ cells resulting in impaired cellular immunity. The body becomes vulnerable to opportunistic infections and malignancies leading to AIDS. The number of people living with HIV/AIDS worldwide in December 2007 was estimated at 33.2 million (30.6–36.1 million). Two-thirds of them live in sub-Saharan countries (22.5 million). In 2007 a total of 2.5 million persons were newly infected with HIV and 2.1 million died of AIDS[1]. In the Netherlands around 15,000 individuals were registered as having an HIV infection, of which 1696 were newly infected in 2008. The estimated number of persons living with HIV in the Netherlands in 2008 was somewhere between 16,000 and 24,000. Of these registered HIV-infected persons, 11,349 are being followed up in one of the 25 AIDS treatment centres in the Netherlands[2].

The first HIV-inhibitor Zidovudine (AZT), was approved for use in America in 1987. Since then more agents of the same class, i.e. reverse transcriptase inhibitors (NRTI), have become available leading to the use of duo therapy. In the early nineteen-nineties, duo therapy was more effective than AZT monotherapy[3]. During these years agents of a second class of treatment, the non-nucleoside transcriptase inhibitors (NNRTIs), became available. The use of drugs of this class was limited due to the rapid loss of effect caused by the development of resistance. The introduction of a third class, the protease inhibitors (PIs), in 1996 resulted in the use of a combination therapy consisting of three drugs of two separate classes, leading to a durable effect. In industrialized countries, these combinations, since then referred to as highly-active antiretroviral therapy (HAART), became the treatment standard for naïve (previously-untreated) HIV-infected patients and resulted in a tremendous decline in HIV and AIDS-related morbidity and mortality[3,4]. HAART inhibits the development and reproduction of HIV, resulting in the suppression of HIV in the blood, leading to an undetectable viral load (plasma HIV-RNA measurement) and increasing CD4+ cells, a surrogate measure of cellular immunity[5,6]. Although this treatment is not curative, continuous, lifelong treatment with antiretroviral therapy has significantly improved life expectancy and turned HIV from a terminal infection into a more chronic disease.

Despite the success of HAART, the risk of development of drug resistance that may lead to treatment failure is a continuous worry in the era of HAART. The presence of drug resistance limits future treatment options because of cross-resistance[7]. Incomplete adherence has been found to be the most common cause of virological failure[8]. Drug interactions leading to insufficient plasma and cellular levels of the medication are other causes of viral rebound.

Unfortunately, HAART is associated with the occurrence of considerable number of adverse events. All antiretroviral drugs can cause both short-term and long-term side effects that might lead to the discontinuation of treatment with HAART[9]. Chronic use of HAART can lead to significant health problems, such as diabetes, cardiovascular disease and lipohypertrophy or lypoatrophy syndrome. The latter condition leads to changes in body shape which might have psycho-social consequences.

Since the introduction of HAART, progress has been made in the field of HIV-treatment. The introduction of newer agents with differing resistance profiles into the existing antiretroviral classes and of two new classes - enter inhibitors and integrase inhibitors -, and of longer-acting agents has led to simpler treatment options and to new options for the treatment of multi-drug-resistant viruses[10,11]. While in 1996 HAART consisted of a combination of many pills (12-18 per day) that had to be taken twice (every 12 hours), or even three times a day (every 8 hours) with food prescriptions that need to be observed, nowadays most HIV-infected persons start with a once-daily regimen. For some of them this regimen consists of only one combination pill per day. For others, three pills have to be taken once a day (after a meal). Although most naïve patients start with a simple regimen and most of the treated patients switch to a simplification of their regimen, a growing number of the treated patients and of naive patients need more complex regimens based on specific drug resistance profiles. This is due to the increase in baseline resistance over recent years[12]. In the Utrecht region in 2008 this was as high as 25%.

Adherence

Strict adherence to antiretroviral therapy is generally required to obtain optimal treatment success. Incomplete adherence may compromise treatment efficacy due to viral rebound and drug resistance[8]. Future treatment options are limited due to cross-resistance[7]. Adherence is of the utmost importance for the success of treatment and this makes adherence support central to the care for HIV-infected patients. The risk of transmission of resistant viruses makes adherence to HAART a vital public health concern[12,13].

An adherence rate of 95% or more to a regimen containing an unboosted protease inhibitor has been found necessary to achieve and maintain viral suppression[14]. More recent studies on more potent HAART (boosted PI or NNRTI) suggest that durable viral suppression can be achieved even with lower adherence rates[15,16]. However, high levels of adherence, > 95%, remain necessary for optimal viral suppression[17]. In comparison with other chronic conditions such as diabetes mellitus and hypertension, this is very high. In most studies on adherence to antihypertensive and diabetes medications the, cut-off point to distinguish adherence from non-adherence is 80%[18-20]. The high adherence rates required make HIV treatment a challenge in comparison with these other chronic therapies[21].

At the beginning of the HAART era, strict adherence meant that treatment had to be taken at exact times; nowadays more is known about the margins within which pills need to be taken. Non-adherence takes the form of missing, forgetting, deliberately skipping or unduly postponing doses, as well as not respecting food requirements and drug holidays. Based on a study by Lima et al.[17] on the relation of adherence and mortality, an information site for people living with HIV (www.aidsmap.com), shows how many doses can be missed per month without endangering effectiveness of the treatment and thus attaining the necessary level of adherence of 95%. In a once-daily regimen no more than one dose can be missed in one month and in twice-daily regimens this is no more than three doses per month[17,22].

Research and daily practice show that achieving the necessary adherence is difficult[17]. Because drug interruptions can lead to a rapid viral rebound, adherence to HAART is a lifelong challenge. Since the beginning of the HAART era there has been a growing body of research to measure and explain adherence. Studies about what influences adherence to antiretroviral therapy focus on quantifiable variables and have led to numerous interventions and strategies to improve adherence to HAART being developed[23,24]. However, the development of these various adherence interventions has meant limited progress in lowering the overall rate of non-adherence[25,26]. Furthermore, it is unclear which parts of the intervention are effective and for which patients.

Adherence support and patients’ perspective

In order to support patients in attaining long-term high levels of adherence there is a need for adherence-promoting strategies that can be tailored to patients’ specific needs. This self-management is the process of patients' individual responses to their illness, encompassing activities to control the illness, planning and managing daily life, constant decision making and it also involves coping with the psychological, physical and social impact of the illness with the aim of making the life of which the illness has become a part a good one[27-29]. Patients all have their unique illness experience and beliefs, leading to different responses to their illness, its treatment and their adherence. Support and care that anticipate patients individual needs increases effectiveness[30,31].

In order to support patients in enhancing and maintaining adherence, there is a need to understand the individual patterns of taking medication and the dynamics of adherence from the patients' perspective[26]. Knowledge is needed about how individuals adhere to therapy in relation to how they experience their illness and what they do to self-manage their illness effectively. The knowledge from the patients' perspective allows the development of adherence support strategies that include a patient's specific needs. Information is needed about which adherence-promoting strategy is required for which patient and to what extent. This knowledge about and understanding of patients' needs and experiences with taking medication and their reasons for adherence and non-adherence, indicates targets for adherence strategies that will contribute to the development of effective patient-tailored interventions[26,32,33]. Individualized interventions have been shown to be more effective than standardized ones[34].

Scope of the thesis

The general objective of the present study is to investigate what influences patient adherence to antiretroviral therapy and to provide an explanation and some understanding of the complex processes that underlie adherence and non-adherence. This knowledge will be used in the development of an approach to enhance and maintain adherence to HAART, addressing to these processes[33,35]. Our study procedure is based on the model for the development of evidence-based nursing interventions, that is appropriate for interventions in which the experience of the individual plays a central role[33]. The model comprises four stages. The first stage is the definition of the problem in which the initial exploration of the problem is formulated. The second stage involves the gathering of the so-called building blocks by reviewing findings from the literature, analysing the problem, and making a needs analysis and an analysis of current practice. In the third stage the design of the intervention is guided by information gathered during the previous stages. The fourth stage of the development is the validation of the intervention[33].

The model places great emphasis on studying the patients' perspective. In order to be able to adequately address the needs of the patient through care intervention, these needs have to be thoroughly understood. Needs differ, and although there are certainly aspects that can be generalized, it is vitally important to have knowledge of these differing needs in order to answer them adequately. Individualization of care is perhaps more dependent on understanding why certain behaviours, motivations or thought processes occur, than on generalized knowledge of determinants. Hence the emphasis the model places on uncovering processes that explain why certain reactions occur and under what circumstances certain interventions may be indicated or contra-indicated.

In order to provide the building blocks for an approach aimed at enhancing and maintaining adherence, we specifically investigated the perspective of the HIV patient. The building blocks were gathered by means of a literature search to find out what is already known about what influences adherence, by carrying out an intensive qualitative study into patients' perspective and by an exploration of current practice on the adherence strategies used by HIV-nurse consultants in Dutch HIV care.

Outline of the thesis

The first part of the thesis focuses on adherence from the HIV patients' perspective (Chapters 2-4). In the second part of the thesis the care for HIV patients is described (Chapters 5-7).

In **Chapter 2** we review the literature on factors influencing adherence from the patients' perspective and search for processes underlying the influencing factors. The review summarizes the results of qualitative studies on adherence to antiretroviral therapy and presents a short overview of the factors known to influence adherence as defined by quantitative studies.

Chapter 3 describes the study that was conducted to explore and clarify the underlying processes which lead to adherence and non-adherence, and to find answers as to why adherence behaviour differs between patients.

Based on a qualitative study, **Chapter 4** describes the motives and processes of disclosure and non-disclosure behaviour in HIV patients taking antiretroviral treatment, and their influence on adherence.

In **Chapter 5** we describe the current practice of HIV care in the Netherlands.

We investigated the role of HIV nursing consultants in the care of HIV-infected patients in Dutch hospital outpatient clinics.

Chapter 6 gives an overview of adherence-supporting strategies used by Dutch HIV-nurse consultants in the Netherlands to improve adherence among HIV-infected patients. Data were gathered through focus group interviews and individual interviews and analyzed qualitatively.

In **Chapter 7** we describe the building blocks of an adherence approach to enhance and maintain adherence in HIV-infected patients treated with antiretroviral therapy based on our current knowledge.

Chapter 8 discusses the findings of this thesis and their implications for further research.

References

1. UNAIDS. 07 AIDS epidemic update. 2007.
2. Gras L, Aighem Av, Smit C, Zaheri S, Schuitemaker H, Wof F. Monitoring of Human Immunodefciency virus (HIV) Infection in the Netherlands. 1-120. 2008. Amsterdam, Stichting HIV Monitoring.
3. Palella FJ, Jr., Delaney KM, Moorman AC, Loveless MO, Fuhrer J, Satten GA et al.: Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. *N Engl J Med* 1998, 338: 853-60.
4. Mocroft A, Ledergerber B, Katlama C, Kirk O, Reiss P, d'Arminio Monforte A et al.: Decline in the AIDS and death rates in the EuroSIDA study: an observational study. *Lancet* 2003, 362: 22-9.
5. Hogg RS, Heath KV, Yip B, Craib KJ, O'Shaughnessy MV, Schechter MT et al.: Improved survival among HIV-infected individuals following initiation of antiretroviral therapy. *Jama* 1998, 279: 450-454.
6. Wood E, Hogg RS, Harrigan PR, Montaner JS: When to initiate antiretroviral therapy in HIV-1-infected adults: a review for clinicians and patients. *Lancet Infect Dis* 2005, 5: 407-414.
7. Race E, Dam E, Obry V, Paulous S, Clavel F: Analysis of HIV cross-resistance to protease inhibitors using a rapid single-cycle recombinant virus assay for patients failing on combination therapies. *Aids* 1999, 13: 2061-8.
8. Robbins GK, Daniels B, Zheng H, Chueh H, Meigs JB, Freedberg KA: Predictors of antiretroviral treatment failure in an urban HIV clinic. *J Acquir Immune Defic Syndr* 2007, 44: 30-37.
9. Montessori V, Press N, Harris M, Akagi L, Montaner JS: Adverse effects of antiretroviral therapy for HIV infection. *CMAJ* 2004, 170: 229-238.
10. Wilson LE, Gallant JE: HIV/AIDS: the management of treatment-experienced HIV-infected patients: new drugs and drug combinations. *Clin Infect Dis* 2009, 48: 214-221.
11. Kozal MJ: Drug-resistant human immunodefiency virus. *Clin Microbiol Infect* 2009, 15 Suppl 1: 69-73.
12. SPREAD programme: Transmission of drug-resistant HIV-1 in Europe remains limited to single classes. *Aids* 2008, 22: 625-635.
13. Wainberg MA, Friedland G: Public health implications of antiretroviral therapy and HIV drug resistance. *Jama* 1998, 279: 1977-83.
14. Paterson DL, Swindells S, Mohr J, Brester M, Vergis EN, Squier C et al.: Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. *Ann Intern Med* 2000, 133: 21-30.
15. Bangsberg DR: Less than 95% adherence to nonnucleoside reverse-transcriptase inhibitor therapy can lead to viral suppression. *Clin Infect Dis* 2006, 43: 939-941.
16. Shuter J, Sarlo JA, Kanmaz TJ, Rode RA, Zingman BS: HIV-infected patients receiving lopinavir/ritonavir-based antiretroviral therapy achieve high rates of virologic suppression despite adherence rates less than 95%. *J Acquir Immune Defic Syndr* 2007, 45: 4-8.
17. Lima VD, Harrigan R, Bangsberg DR, Hogg RS, Gross R, Yip B et al.: The combined effect of modern highly active antiretroviral therapy regimens and adherence on mortality over time. *J Acquir Immune Defic Syndr* 2009, 50: 529-536.
18. Wetzels GE, Nelemans P, Schouten JS, Prins MH: Facts and fiction of poor compliance as a cause of inadequate blood pressure control: a systematic review. *J Hypertens* 2004, 22: 1849-1855.
19. Rozenfeld Y, Hunt JS, Plauschinat C, Wong KS: Oral antidiabetic medication adherence and glycemic control in managed care. *Am J Manag Care* 2008, 14: 71-75.

20. Vincze G, Barner JC, Lopez D: Factors associated with adherence to self-monitoring of blood glucose among persons with diabetes. *Diabetes Educ* 2004, 30: 112-125.
21. Shuter J: Forgiveness of non-adherence to HIV-1 antiretroviral therapy. *J Antimicrob Chemother* 2008, 61: 769-773.
22. nam editorial team: Adherence and long-term treatment succes. *hiv treatment uipdate january/ february 2009* 2009, 183.
23. Amico KR, Harman JJ, Johnson BT: Efficacy of antiretroviral therapy adherence interventions: a research synthesis of trials, 1996 to 2004. *J Acquir Immune Defic Syndr* 2006, 41: 285-297.
24. Simoni JM, Pearson CR, Pantalone DW, Marks G, Crepaz N: Efficacy of interventions in improving highly active antiretroviral therapy adherence and HIV-1 RNA viral load. A meta-analytic review of randomized controlled trials. *J Acquir Immune Defic Syndr* 2006, 43 Suppl 1: S23-S35.
25. Sankar A, Golin C, Simoni JM, Luborsky M, Pearson C: How qualitative methods contribute to understanding combination antiretroviral therapy adherence. *J Acquir Immune Defic Syndr* 2006, 43 Suppl 1: S54-S68.
26. van Dulmen S., Sluijs E, van Dijk L, De Ridder D, Heerdink R, Bensing J: Furthering patient adherence: a position paper of the international expert forum on patient adherence based on an internet forum discussion. *BMC Health Serv Res* 2008, 8: 47.
27. Barlow J, Wright C, Sheasby J, Turner A, Hainsworth J: Self-management approaches for people with chronic conditions: a review. *Patient Educ Couns* 2002, 48: 177-187.
28. Grypdonck MH: *Het leven boven de ziekte uittillen; de opdracht van de Verpleegkunde en de Verplegingswetenschap voor chronisch zieken. Inaugurele rede Universiteit Utrecht*, 3 edn. Leiden: Spruyt, Van Mantgem & De Does BV; 1996.
29. Thorne S, Paterson B, Russell C: The structure of everyday self-care decision making in chronic illness. *Qual Health Res* 2003, 13: 1337-1352.
30. Bodenheimer T, Lorig K, Holman H, Grumbach K: Patient self-management of chronic disease in primary care. *Jama* 2002, 288: 2469-2475.
31. Gamel C, Grypdonck M, Hengeveld M, Davis B: A method to develop a nursing intervention: the contribution of qualitative studies to the process. *J Adv Nurs* 2001, 33: 806-819.
32. Bangsberg DR: Preventing HIV antiretroviral resistance through better monitoring of treatment adherence. *J Infect Dis* 2008, 197 Suppl 3: S272-S278.
33. van Meijel B, Gamel C, van Swieten-Duijfjes B, Grypdonck MH: The development of evidence-based nursing interventions: methodological considerations. *J Adv Nurs* 2004, 48: 84-92.
34. Lauver DR, Ward SE, Heidrich SM, Keller ML, Bowers BJ, Brennan PF et al.: Patient-centered interventions. *Res Nurs Health* 2002, 25: 246-255.
35. Morse JM, Penrod J, Hupcey JE: Qualitative outcome analysis: evaluating nursing interventions for complex clinical phenomena. *J Nurs Scholarsh* 2000, 32: 125-130.

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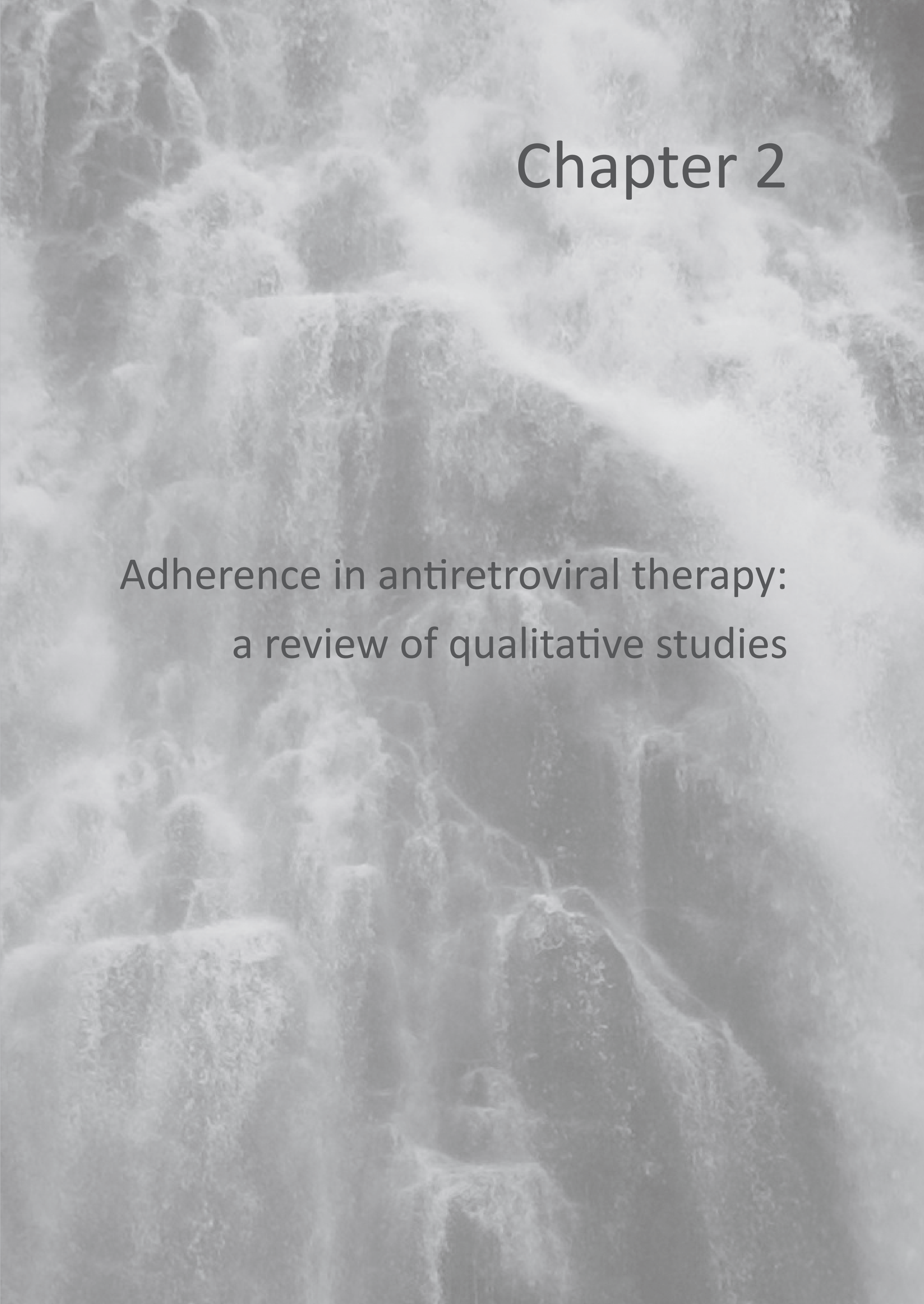
Received: 10 May 2006; accepted: 5 October 2006.
AIDS 2007, 21:271–281



Chapter 2

Adherence in antiretroviral therapy: a review of qualitative studies

Introduction

Since the introduction of HAART, HIV- and AIDS-related mortality has declined tremendously[1,2]. The continuous, lifelong treatment with antiretroviral therapy has significantly improved life expectancy and turned HIV from a terminal infection into a chronic disease. In HAART, adherence is of utmost importance. Poor adherence, indeed, may lead to medication failure, viral mutations and development of drug resistance[3,4]. Future treatment options become limited because of cross-resistance[5]. The risk of transmission of resistant viruses makes adherence a public health concern[6,7]. Research and daily practice have shown that strict adherence is difficult to achieve for many of the HIV-infected patients treated with antiretroviral therapy[8,9]. Adherence to HAART requires patients to behave in a way that cannot easily be incorporated into daily life.

On the basis of earlier studies on adherence, a level of 95% or more seems to be required to prevent the development of resistant viruses[10–12]. In more recent studies, it has been shown that durable viral suppression can be achieved by using HAART regimens that require lower adherence than 95%[13,14]. Other studies suggest that the relationship between adherence and the development of resistance differs by drug class. The prevalence of resistance to non-nucleoside reverse transcriptase inhibitors is significantly higher at low levels of adherence than that to protease inhibitors[15,16].

To attain the benefits of HAART, there is a strong need for effective adherence interventions in the care of HIV-infected patients. In the process of developing patient tailored intervention procedures, a literature study was carried out to examine what is known about the problem from the patient's perspective[17]. This article reports the results of this review.

Quantitative studies identify factors related to or predicting adherence. Three reviews of these studies have been published in recent years[18–20]. The present review focuses on qualitative studies. Qualitative studies are conducted to explore the meaning people give to situations and are helpful in laying bare the processes that are at play in adherence[21].

To develop an intervention tailored to the individual situation, it is necessary to understand the way people manage their daily lives when taking HAART and the interaction of this process with adherence[17,22].

Before discussing the findings from the qualitative studies, those of the quantitative reviews are summarized. The factors are grouped into the same dimensions and reported in the same sequence as used by the World Health Organization[20]: socioeconomic factors, healthcare team and system-related factors, condition-related factors, therapy-related factors and patient-related factors. Against this background, the findings of our own review are reported.

Summary of factors related to adherence derived in quantitative studies

Socioeconomic factors such as age, gender, race, educational level and income level are inconsistent in influencing adherence[18,19]. Women who live together with children tend to have a lower level of adherence[19]. Social support from family and friends affects adherence positively[18,20].

Healthcare team and system-related factors related to adherence include clear instructions, providing adequate knowledge about the relationship between adherence and resistance and better medical follow-up. Support from nurses and pharmacists positively influences adherence[19]. However, Ammassari et al.[18] concluded that satisfaction with healthcare and the patient–provider relationship are inconsistent factors in affecting adherence.

Condition-related factors such as CD4 cell count, viral load and time living with HIV do not significantly correlate with non-adherence in all studies[18,19]. Having HIV-related symptoms is positively associated with non-adherence[18].

Therapy-related factors are seen as significantly associated with non-adherence[18,19]. The antiretroviral regimen is complex: number of pills, number of daily doses, food restrictions and fitting the regimen into daily living. Side effects related to HAART are strongly associated with non-adherence, especially in persons who started treatment in an asymptomatic phase[18,19].

Patient-related factors associated with non-adherence include low patient self-efficacy, psychological distress and depression[18,19]. Mixed results were found for anxiety and depressive symptoms[18,19]. Forgetfulness is a reason for non-adherence[18,19]. Furthermore, inadequate confidence in treatment effectiveness and poor understanding of the relation between adherence and the development of resistance influence non- adherence[19]. Knowledge and beliefs about treatment are inconsistent factors in affecting adherence[18]. Substance abuse is a determinant of non-adherence[19] but seems not to be a consistent factor across studies[18].

Method

Qualitative studies published from 1996 through April of 2005 were selected for this review if they focused on the patients' perspectives, barriers, facilitators and the process of adherence to HAART.

Selection of articles

Relevant articles were identified by using the electronic database indexes (CINAHL, PUBMED, and Web of Science). The search terms HIV, (non)adherence, interviews, barriers, qualitative, study, perceptions, antiretroviral and combination were combined. The search was restricted to articles written in English. Articles were excluded for different reasons. The exact way the search was done and the reasons for excluding articles are shown in **Table 1**. The nature of the qualitative designs was not a criterion for exclusion. Articles that used both qualitative and quantitative methods were included but only the qualitative findings were drawn upon for this review (data taken from 23–46).

Review of methodological quality

Studies meeting the inclusion criteria were evaluated by two reviewers for methodological quality. The appraisal considered the nature of the sample, the recruitment strategy, the population and the sample size. The quality of data collection was appraised for measures taken to assure validity, quality of the data collector (interviewer), interview type, data triangulation and the likely thickness of the data (i.e., whether enough data had been collected to support the conclusions, as can be inferred from the interview guide and the number and duration of the interviews). With regard to data analysis, attention was given to coding procedures, interpretation, measures to assure validity of the analysis and triangulation in the analysis (**Table 2**).

Based on the appraisal, some studies were considered to be based on insufficient data to extract strong conclusions. Either their samples were too small[37,44] or the data collection methods did not allow sufficient depth[30,38]. Four studies did not describe the duration of the (focus) interviews[25,26,30,35]. The other studies which used 'focus group' interviews were appraised as likely to be based on thin data, given the time available for data collection[24,27,28,33].

In four articles, the coding procedure was unclear[30,32,33,37]. In some articles the interpretation process cannot be easily reconstructed[23,25–27,33,36,37,41,44,45].

Table 1. *Search strategy*

Resource	Search terms	Hits	Reason for exclusion and	No. of excluded articles	Included articles by author
Pubmed	HIV AND Adherence AND interviews AND barriers	25	Non antiretroviral adherence	10	Adam et al.[23]
			Intervention study	2	Golin et al.[24]
			Quantitative study	1	Murphy et al.[25]
			Population: Children	1	Murphy et al.[26]
			Population: Adolescents	1	Powell-Cope et al.[27]
			Non-western	1	Proctor et al.[28]
			Specific group (Physician beliefs on adherence communication)	1	Ryan & Wagner[29]
					Wood et al.[30]
	HIV AND (adherence OR non-adherence) AND Qualitative AND study AND interviews	22	Non antiretroviral adherence	9	Klitzman et al.[31]
			Population: Children	1	Laws et al, [32]
			Non-western	2	Powell-Cope et al.[27]
			Specific population: nurses	1	Proctor et al.[28]
					Ryan & Wagner[29]

Table 1. *Continued*

Resource	Search terms	Hits	Reason for exclusion and	No. of excluded articles	Included articles by author
					Schilder et al.[33]
					Westerfelt[34]
					Wilson et al.[35]
					Witteveen & Ameijden, van[36]
	HIV AND Adherence AND interviews AND perceptions	12	Non antiretroviral adherence	7	Abel & Painter[37]
			Population: Children	1	Adam et al.[23]
					Sankar et al.[38]
ISI web/Web of Science	HIV AND antiretroviral AND (experiences OR perspectives) AND (adherence OR non-adherence)	31	Non antiretroviral adherence	8	Golin et al.[24]
			Intervention study	1	Malcolm et al.[39]
			Quantitative study	10	Remien et al.[40]
			Population: Children	2	Roberts[41]

Table 1. *Continued*

Resource	Search terms	Hits	Reason for exclusion and	No. of excluded articles	Included articles by author
			No empirical study	1	Roberts & Mann[42]
			Review in French	1	Schilder et al.[33]
					Stone et al.[43]
					Westerfelt[34]
CINAHL	HIV AND adherence AND qualitative AND study and interview AND (antiretroviral OR Combination)	34	Non antiretroviral adherence	14	Erlen & Mellors[44]
			Intervention study	4	Hill et al.[45]
			Quantitative study	3	Malcolm et al.[39]
			Population: Children	2	Remien et al.[40]
			Population: Adolescents	2	Siegel et al.[46]
			Non-western	1	Westerfelt[34]
					Wilson et al.[35]
					Wood et al.[30]

Table 2. *Methodological quality of the reviewed studies.*

	Participants of the study				Data collections	
Authors	Nature of the sample	Recruitment strategy	Population	Sample size	Validity measures	Quality of data collector
Abel and Painter[37]	C	D	U	U	D	D
Adam et al.[23]	C	S	S	S	D	D
Erlen and Mellors[44]	P	D	D	U	D	D
Golin et al.[24]	C	S	S	S	D	S
Hill et al.[45]	C	D	D	S	D	S
Klitzman et al.[31]	C	D	S	S	D	S
Laws et al.[32]	C	D	S	S	S	D
Malcolm et al.[39]	C	S	S	S	S	S
Murphy et al.[25]	C	D	S	S	D	D
Murphy et al.[26]	C	D	S	S	D	D
Powell-Cope et al.[27]	C	D	S	S	D	S
Proctor et al.[28]	C	D	D	S	D	D
Remien et al.[40]	C	D	S	S	D	S
Roberts[41]	C	D	S	S	S	D
Roberts and Mann[42]	C	D	S	S	S	Diary
Ryan and Wagner[29]	C	D	S	S	D	D
Sankar et al.[38]	C	D	S	S	S	S
Schilder et al.[33]	C[a]	D	S	S	S	D
Siegel et al.[46]	P	D	S	S	D	S
Stone et al.[43]	C	S	S	S	S	S
Westerfelt[34]	C	S	D	S	D	U
Wilson et al.[35]	P	D	S	S	D	S
Witteveen and Ameijden, van[36]	C	S	S	S	D	D
Wood et al.[30]	C	D	S	S	D	D

C, convenience; P, purposive; S, satisfactory; D, dubious or not mentioned ; U, unsatisfactory.

[a] *Described by the authors as purposeful.*

Table 2. *Continued*

Data collections			Data analysis			
Interview type	Data triangulation	Thickness data	Coding procedure	Interpretation	Validity measures	Triangulation analysis
D	U	D	D	U	D	S
S	U	S	S	D	S	D
S	U	U	S	D	D	S
D	U	U	S	S	D	S
S	U	S	D	D	D	D
S	U	S	S	S	D	S
S	U	S	S	S	D	S
S	U	S	S	S	S	S
D	U	D	S	D	D	D
D	U	D	S	D	S	D
D	U	U	S	D	S	S
D	U	U	S	S	D	S
S	U	S	S	S	S	S
S	U	S	S	D	D	S
Diary	U	?	S	D	D	D
S	U	U	S	S	D	D
D	U	D	S	S	S	D
D	U	D	D	D	D	D
S	U	S	S	S	D	S
D	U	U	S	S	S	S
S	U	U	S	S	D	D
S	U	D	S	S	S	U
S	U	S	S	D	D	U
S	U	D	D	D	D	D

Most of the studies provide limited information regarding the validity of the analysis[24–26,28–30,33,34,36,41,42,45,46]. The analysis of one study[32] was appraised as dubious because the authors focused on what was common among participants and did not analyse differences.

However, the findings of the studies in which the method was unclear or questionable were in most respects comparable with the findings of the other studies. Consequently, these studies were not excluded from the review.

Analysis

The included publications were read several times. During this process, findings were coded inductively and interpreted; after which the articles were organized in thematic groups and compared within these groups. The main branches of the code-tree were based on earlier studies and inductively specified. This process was performed by the first researcher and controlled by the second. When their opinions diverged, the matter was discussed until consensus was reached. The analysis of the findings of the various studies led to the identification of overall categories of themes affecting adherence.

Results

The studies used a descriptive design or appropriated parts of ‘grounded theory’ methodology. Only the article of Wilson et al.[35] set forth a coherent theory based on the methodology of grounded theory. This ‘theory of reconciling incompatibilities’ explains how adherence choices occur in a particular context and in the face of specific conditions. Themes and factors associated with those choices have been summarized in this review. Three studies used a quantitative and qualitative approach[25–27]. One study[29] was supplementary to a study using electronic measures of adherence. Some studies[33,34] had a broader scope than adherence. Only the findings on adherence are included in this review. Except for one longitudinal study[42], all studies have a cross-sectional design.

The respondents

The majority of the respondents were recruited through HIV/AIDS clinics, treatment centres (healthcare) and AIDS-service organizations (community). Most studies recruited in healthcare and community organizations. One study on drug users recruited through methadone posts and included patients taking part in a longitudinal cohort study[36]. The recruitment for most studies was by flyers and posters, which can be considered a high threshold for participation. Some studies recruited respondents partly by direct invitation, which may be assumed to lead to a higher probability of participation[23,24,26–28,31,32,34,36,38,39,42,43]. Most studies included mixed populations. All studies included persons of 18 years and older, except one study[46], which only included patients of 50 years and older. Only three studies[28,43,44] described the nature of the HIV exposure.

Data collection varied in that in-depth interviews, (semi-)structured interviews, focus interviews and diaries were used.

The themes

When analysing the findings in detail, 13 primary themes could be identified (**Table 3**). These themes could easily be grouped into the main categories used in the quantitative reviews. The order has been adapted to reflect better on the process-oriented thinking of qualitative research on adherence to antiretroviral therapy. The categories are not mutually exclusive: a theme can be classified in more than one category. A theme is introduced in the category in which it has most weight.

Therapy-related factors

Both the qualitative and the quantitative studies show that many patients experience side effects when taking HAART, and that these are an important reason for non-adherence[23,26–28,30,32,34–37,40–42, 44–46]. Believing that the medication is too iatrogenic is also a reason for non-adherence[33]. Patients choose to give the body time to rid itself of medicine and recover from the resulting side effects by skipping doses[32,40]. In the model produced by Wilson et al.[35], deviation from prescribed routine based on body-listening and gauging was described as sub-processes of self-tailoring.

Patients experience demands of the medication based on the strict rules and complexities of the regimen. The intake–frequency/schedule, changes in prescribed medication, the large number, the size and bad taste of pills all have a negative bearing on adherence[23–29,34–37,40– 42,44,46]. Food prescriptions that need to be observed when taking HAART may make adherence more difficult[23,27,28,41]. Skipping a meal may also lead to skipping a medication dose[32,46].

Table 3 *Characteristics of the included studies and the finding (alphabetically by author).*

Study	Method	N analysed	**Factors**	
			Therapy	
			Side-effects	Regimen demands
Abel and Painter[37]	Two focus group interviews Pilot study	11	X	X
Adam et al.[23]	Open ended interviews	35	X	X
Erlen and Mellors[44]	Semi-structured interviews	6	X	X
Golin et al.[24]	Six focus groups Structured questions	24		X
Hill et al.[45]	Open ended and semi-structured interviews	78	X	
Klitzman et al.[31]	Structured scheduled open ended interviews	152		
Laws et al.[32]	Close-ended and open-ended interviews	25 (of 61) analyzed	X	X
Malcolm et al.[39]	Semi-structured interviews	44		
Murphy et al.[25]	Focus groups	39		X
Murphy et al.[25]	Eight focus groups	74 (of 81) analyzed	X	X
Powell-Cope et al.[27]	Focus groups	24	X	X
Proctor et al.[28]	Focus groups	39	X	X
Remien et al.[40]	In-depth interviews	110	X	X
Roberts[41]	In-depth interviews	28	X	X
Roberts and Mann[42]	Journals	20	X	X
Ryan and Wagner[29]	Semi-structured interviews	27		X
Sankar et al.[38]	Open ended interviews	15		
Schilder et al.[33]	Focus groups	47		
Siegel et al.[46]	Intensive interviews	49	X	X
Stone et al.[43]	Six focus groups	56		
Westerfelt[34]	Three focus groups	21	X	X
Wilson et al.[35]	In-depth semi-structured interviews	66	X	X
Witteveen and van Ameijden[36]	In-depth interviews	27	X	X
Wood et al.[30]	Structured questions	36	X	

Table 3 *Continued*

Factors						
Condition		Patient				
psychological distress	Disclosure/ secrecy/ stigma	Trust/Belief	Motivation	Knowledge	Forgetting	Moods
X	X	X				
	X	X			X	X
X					X	
	X	X	X		X	
X	X			X	X	X
	X					
				X	X	
	X		X	X		X
	X		X	X	X	
	X	X			X	X
X			X		X	
X	X	X			X	X
X		X	X	X		X
	X	X	X	X	X	
X	X	X			X	
					X	X
	X	X			X	
						X
	X			X	X	
	X	X		X	X	
	X				X	
X		X				
X		X		X		X
X			X		X	X

Table 3 *Continued*

		Factors			
Study	Method	Patient	Health care	Socio-economic	
		Substance use	Relation with practitioner	Social support	Homelessness
Abel and Painter[37]	Two focus group interviews Pilot study		X		
Adam et al.[23]	Open ended interviews			X	
Erlen and Mellors[44]	Semi-structured interviews			X	
Golin et al.[24]	Six focus groups Structured questions		X		
Hill et al.[45]	Open ended and semi-structured interviews	X	X		
Klitzman et al.[31]	Structured scheduled open ended interviews				
Laws et al.[32]	Close-ended and open-ended interviews	X			
Malcolm et al.[39]	Semi-structured interviews	X	X	X	
Murphy et al.[25]	Focus groups		X	X	
Murphy et al.[25]	Eight focus groups	X	X	X	
Powell-Cope et al.[27]	Focus groups	X	X		
Proctor et al.[28]	Focus groups		X		
Remien et al.[40]	In-depth interviews	X	X	X	
Roberts[41]	In-depth interviews		X	X	
Roberts and Mann[42]	Journals				
Ryan and Wagner[29]	Semi-structured interviews	X		X	
Sankar et al.[38]	Open ended interviews	X	X	X	
Schilder et al.[33]	Focus groups	X	X		
Siegel et al.[46]	Intensive interviews				
Stone et al.[43]	Six focus groups		X		X
Westerfelt[34]	Three focus groups				
Wilson et al.[35]	In-depth semi-structured interviews				
Witteveen and van Ameijden[36]	In-depth interviews	X	X	X	X
Wood et al.[30]	Structured questions			X	

Condition-related factors

Condition-related factors pertain to being HIV positive: the symptoms of the illness, the lifelong treatment, the social image of HIV and the impact of being HIV positive on daily life. These factors are psychological distress and secrecy or disclosure of the HIV diagnosis.

Psychological distress related to the condition of being HIV positive influences adherence and is related to the uncertainty of the chronic character of HIV and its lifelong treatment[37]. Patients are worried about the toxic substances that they are ingesting. These worries can lead to the development of ambivalence based on the paradox that the medications are both life saving and toxic. Ambivalence can lead to non-adherence[40].

Emotional distress may also be related to having difficulties with the HIV diagnosis and the negative aspects of antiretroviral therapy[27,28]. Taking HAART confronts patients with their HIV status[27,30, 36,37,42,44,45]. In the model of Wilson et al.[35], being HIV positive is a part of the construct self-identity that includes non-adherence caused by avoiding the confrontation with having HIV. Acceptance of HIV is seen as influencing adherence[35,36,38,45]. Competencies in handling embarrassing situations and self-control will help to prevent emotional distress and thus non-adherence[36].

Most HIV-infected patients do not disclose their HIV diagnosis, fearing stigmatization, discrimination and isolation. Secrecy is difficult to maintain if one has to take medication[23–26,42]. Adverse side effects can be experienced as a sign of illness and are thus a risk factor for unwanted disclosure[31]. When it is not possible to take medicine out of sight of others, adherence is hindered and a dose is easily skipped[24–26,28,31,34,37,38,41– 43,45,46]. Patients who are open about their HIV and do not mind taking their pills in public have a higher level of adherence[31,38,39]. However, disclosure can also impede adherence when it results in antagonistic reactions from others who have negative beliefs and expectations about antiretroviral medication[31].

Patient-related factors

Patient-related factors represent internal factors, including trust and belief in the therapy, the motivation to take therapy, knowledge of HAART and adherence, forgetting, moods and substance use.

As in the quantitative studies, we see that patients treated with HAART are motivated to be adherent by trust and belief in the benefit of antiretroviral therapy[23,24,26– 28,36–38,40–43]. Visible signs proving that medication works are helpful in supporting continuing adherence[40,43]. Information patients receive from their healthcare provider and persons in their environment are an important basis of both belief and trust in (or doubt about) the effectiveness of the medication. Patients' confidence in the effectiveness can change over time, based on laboratory results, opinions of surrounding people and of others taking the same medication[23,38]. In the theory of Wilson et al.[35], illness ideology, representing someone's belief about treatment, was described as a factor influencing adherence choices and based on either trust or distrust in medical science.

Being aware that antiretroviral medication allows people with HIV to live longer is important in the motivation to be adherent in taking medication. Patients feel motivated because they believe in the powerful ability of the medication to keep them alive[24,25,27,39–41]. An individual's desire to stay alive is fed by the desire to take part in future events or to stay healthy to raise children, the latter being of particular importance to women[24,27,30,40].

An individual's knowledge of HAART and of the importance of taking the medication adherently seems to bear significantly on adherence behaviour[39,41,43,45,46]. Adherence behaviour is often based on personal interpretations of good practice[41,45]. Misconceptions can lead individuals to think that they are taking medication correctly, while in fact they are not properly following the instructions and are thus non-adherent[25,32,36,40,41,45,46]. Siegel et al.[46] considered this type of misconception to be a justification of non-adherence behaviour, based on the 'theory of accounts' of Scott and Lyman[47].

Sometimes patients just forget to take their antiretroviral medication[27,29,30,32,34,38,41–46]. Forgetting has several causes. Disruption of daily routines is the main one[23,24,26,28,32,36,42]. The medication cannot be taken as usual because the activities in which it has become incorporated fail to occur. Deviations in activities may be related to being too busy (work, child care), falling asleep or disruption of daily routines (weekends, social life, partying and travelling)[23,25,26,28,29,32,34,36,41–43,45,46]. On the one hand, a medication scheme not fitting into normal daily activities or an individual leaving home without medication are causes offered for forgetting to take medication[23–25,28,30,32,43,45]. On the other, creating a routine which incorporates taking medication promotes adherence[29,35,41,44]. Patients remember more easily to take doses when the medication-scheme is linked to daily activities[23]. Patients use practical aids as reminders, such as pill boxes, alarms and medication schedules[23,24,26–28,34,36,37,40,41,43]. The use of these reminders may be compromised when a patient wants to prevent disclosure. The situations in which reminders may be avoided are at the same time the ones in which the risk of forgetting is high because normal routine is interrupted.

Mood states not (directly) related to being HIV positive, such as concerns, stress and feelings of depression, affect adherence negatively[23,26,28–30,33,36,39,40,45]. In particular, feeling angry, depressed or sad increases non-adherence[26,30,39]. Self-respect and the ability to enjoy oneself has a positive influence on adherence [23,36]. Substance use (drugs/alcohol) is detrimental to adherence[26,27,29,32,33,36,38,40]. Apart from intravenous drug use, negative influences are reported from 'heroin and cocaine addiction'[27,36], 'drinking and drugging'[45] and 'substance abuse'[27,36,40,45]. Only the daily acquisition of drugs seems important and that leads to non-adherence[29,36,39].

Healthcare team and system-related factors

Healthcare team and system-related factors include the relationship and quality of communication with healthcare providers. Having faith in the healthcare provider and the experience of a good relationship with the healthcare provider that is based on trust and professional support seem to influence adherence positively[24–27,33,36,38–41,43,45]. Characteristics of a supportive healthcare provider include a caring attitude, effective and frank communication and clear instructions, being responsive and accessible and showing respect[25,27,37]. Sufficient time for consultations and taking time to listen are considered important in increasing trust and thus adherence[25,27,36].

Socioeconomic factors

Socioeconomic factors encompass environmental factors and factors of economic status. Social support is also discussed in this category. Most of the reviewed studies give some data on socioeconomic variables such as income, work, disability, etc. Only one study[41] referred to the influence of poverty on adherence. Two studies[36,43] mentioned homelessness as negatively influencing adherence.

As in the quantitative studies, social support was found to influence adherence to antiretroviral medication. Support from family members, including children, and friends plays a role in adherence to therapy[23,25–27,29, 30,36,38–41,44]. Social support has a positive influence on adherence if it is substantial and practical: reminding to take medication, actually giving out the medication and/or offering food and drink to accompany the intake of the medication[23,30,40]. By comparison, a partner who takes medication on a different schedule or who discourages the taking of medication can lead to adherence problems[23,40].

Themes specific for subgroups

The HIV population includes subgroups such as women, men who have sex with men and drug users. Most studies comprised mixed populations. Some studies distinguished different subgroups. Only Remien et al.[40] described not finding any consistent differences between the three subgroups. In the other studies, no subgroup analysis was carried out.

In the studies that included only women, child care was found to be a risk factor for adherence[27,37,41,42] yet the wish to raise one's children is a major motivation to stay alive and to take HAART adherently[27,30,42]. Children supporting the adherence of their mother is particularly commented on for the women in the study of Remien et al.[40]. Weight gain as an adverse side-effect leading to non-adherence is only mentioned in studies with women[37,42].

Some factors with known influence on adherence are more pronounced in specific populations such as drug users. Generally, drug users have an irregular lifestyle[36]. As antiretroviral treatment is extremely difficult to fit into such a lifestyle, it is obvious that the risk for reduced adherence in this subgroup of patients is much higher than in other populations. **Table 4** has an overview of subgroup-specific factors.

Table 4. *Influencing factors, specific for subgroups.*

Factor		Women	MSM*	Substance abuse
Social support	Distraction of children/childcare[27]	X		
	Support by children[40]	X		
	Little social support/isolation[36]			X
Motivation	Time with family/ to raise children[24, 27, 30, 40, 43]	X		
Drug use	Small view (only acquisition of drugs)[29, 36, 39]			X
	Interaction of drugs with HAART[36]			X
	Homelessness[36]			X
Side effect	Weight gain[37, 42]	X		
Demands of medication	Logistics of obtaining medication[36]			X
Health care	Physicians affirmation with social/sexual self-concept[33]		X	

**MSM, Men who have sex with men*

Discussion

In this review, findings of various qualitative studies on adherence to HAART were integrated to provide an overview of the experiences of HIV-infected patients and the processes underlying the factors identified in quantitative research. The qualitative studies not only confirmed the factors found in the quantitative studies but also provided explanations as to why many of these factors influence adherence. The explanations can be used in designing interventions that are attuned to the patient's situation. This discussion will integrate the results of the quantitative and qualitative studies as recommendations for healthcare providers in the field of HIV.

As adherence is a dynamic phenomenon in which influences vary over time, the relevance of ongoing (i.e., lifelong) attention to adherence to antiretroviral therapy should have highest priority. Healthcare providers should acquire insight into possible influencing factors in each individual patient before HAART is started and during treatment. On the base of this information, a patient can be better prepared and actions can be undertaken for specific support to optimize adherence.

Therapy-related factors:

Adapting medication to life rather than life to medication is the first and most important strategy to promote adherence. For instance, the use of a watch or pillbox with an alarm can be helpful in reminding a patient to take medication if (unwanted) disclosure can be avoided.

When HAART is introduced, information on possible side effects and instructions on how to manage these side effects should be given. It is important that possible side effects should be explained clearly so that patients understand properly how their medications work. During every follow-up visit, any ambivalence toward the medications (they heal but are also toxic) should be discussed.

All patients who start treatment should be prepared for the possibility of unpleasant and distressing side effects and advised how to handle them.

Condition-related factors:

The patient's acceptance of being HIV positive should be discussed, as acceptance improves the chances of adherence. If medically possible, it may be better to delay treatment while helping the patient to accept the disease. Furthermore, a patient should be prepared for the fact that starting HAART can renew the confrontation with being HIV positive, which can lead to psychological distress and, therefore, to non-adherence. Follow-up should be arranged to give support. Secrecy is threatened by taking treatment. The possibility of disclosure should be discussed with the patient as openness leads to a higher level of adherence. The fact that disclosure can lead to negative comments from others, which may adversely influence adherence, should also be discussed. If disclosure is not an option, a patient can be informed how to handle taking medicine in secret to prevent skipping doses.

If HIV-related symptoms are present, actions should be taken to diminish or manage those symptoms.

Patient-related factors:

Feedback about positive reactions of the body should be used to support adherence. Showing a decreasing viral load and an increasing CD4 cell count will build trust in the medication. As trust and belief can change over time with subjective experience or through information from others, it is necessary to discuss this theme during every follow-up visit.

Pointing out the value of treatment for the patient's life during follow-up visits enhances motivation.

Information appropriate to a patient's level of understanding will lead to the patient having correct knowledge of what constitutes good adherence practice. Because a patient's personal interpretation of good adherence practice may be based on misconceptions that are used to justify risky behaviour, it is important to ask patients to describe their behaviour and if necessary to repeat instructions.

Discussing details of the circumstances that lead to forgetting medication can reveal aspects that need attention in order to improve adherence. Attention should be given to personal skills, such as the capacity to organize one's life and one's activities and the ability to anticipate risk situations.

In case of depression, a patient should be advised to undergo treatment before starting HAART. In case of substance use, it is important to find a way to minimize the risk that substance use will remain the first priority in life. Professional support or daily observed therapy can be an option.

Healthcare team and system-related factors:

A trusting relationship with the healthcare provider is essential. This relationship is built on support and open communication. Providers should give clear instructions on how to take medication, explain the relationship between adherence and viral load and offer good medical follow-up.

Socioeconomic factors:

Acquiring insight into a patient's social support systems and counselling on how to use them is a valuable strategy in optimizing adherence. Social support has to be substantial and practical, such as reminders to take medication. Attention should also be paid to possible negative influences on adherence in the patient's environment, perhaps coordinating the (medication) schedules of partners or dealing with a discouraging influence. Mothers of young children may need help to fit the medication into the family's hectic schedule.

Summary

This review intended to lay bare the processes that are at play in adherence and a number of these processes have been highlighted. Most of the included studies, however, did not uncover underlying processes. In the majority of these studies, such factors were simply enumerated. Little attention was devoted to the relationship between the identified themes and factors related to adherence. These studies, often using limited data, fall short as qualitative studies. Only one study led to the development of an integrated theory of adherence behaviour[35]. Furthermore, subgroup factors need more attention as does the influence of hardship and vulnerability.

Further qualitative studies can make an important contribution in this field, particularly when the research approaches deal with the respondents' own perspective. Such methods are essential given the complexity of adherence.

References

1. Palella FJ Jr, Delaney KM, Moorman AC, Loveless MO, Fuhrer J, Satten GA, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. *N Engl J Med* 1998, 338:853–860.
2. Mocroft A, Ledergerber B, Katlama C, Kirk O, Reiss P, d'Arminio Monforte A, et al. Decline in the *AIDS* and death rates in the EuroSIDAstudy: an observational study. *Lancet* 2003,362:22–29.
3. McNabb J, Ross JW, Abriola K, Turley C, Nightingale CH, Nicolau DP. Adherence to highly active antiretroviral therapy predicts virologic outcome at an inner-city human immunodeficiency virus clinic. *Clin Infect Dis* 2001, 33:700–705.
4. Hecht FM, Grant RM, Petropoulos CJ, Dillon B, Chesney MA, Tian H, et al. Sexual transmission of an HIV-1 variant resistant to multiple reverse-transcriptase and protease inhibitors. *N Engl J Med* 1998, 339:307–311.
5. Race E, Dam E, Obry V, Paulous S, Clavel F. Analysis of HIV cross-resistance to protease inhibitors using a rapid singlecycle recombinant virus assay for patients failing on combination therapies. *AIDS* 1999, 13:2061–2068.
6. Wainberg MA, Friedland G. Public health implications of antiretroviral therapy and HIV drug resistance. *JAMA* 1998, 279:1977–1983.
7. Boden D, Hurley A, Zhang L, Cao Y, Guo Y, Jones E, et al. HIV-1 drug resistance in newly infected individuals. *JAMA* 1999, 282:1135–1141.
8. Nieuwkerk PT, Sprangers MA, Burger DM, Hoetelmans RM, Hugen PW, Danner SA, et al. Limited patient adherence to highly active antiretroviral therapy for HIV-1 infection in an observational cohort study. *Arch Intern Med* 2001, 161:1962–1968.
9. Hugen PW, Langebeek N, Burger DM, Zomer B, van Leusen R, Schuurman R, et al. Assessment of adherence to HIV protease inhibitors: comparison and combination of various methods, including MEMS (electronic monitoring), patient and nurse report, and therapeutic drug monitoring. *J Acquir Immune Defic Syndr* 2002, 30:324–334.
10. Low-Beer S, Yip B, O'Shaughnessy MV, Hogg RS, Montaner JS. Adherence to triple therapy and viral load response. *J Acquir Immune Defic Synd*r 2000, 23:360–361.
11. Paterson DL, Swindells S, Mohr J, Brester M, Vergis EN, Squier C, et al. Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. *Ann Intern Med* 2000, 133:21–30.
12. Bangsberg DR, Hecht FM, Charlebois ED, Zolopa AR, Holodniy M, Sheiner L, et al. Adherence to protease inhibitors, HIV-1 viral load, and development of drug resistance in an indigent population. *AIDS* 2000, 14:357–366.
13. Dybul M, Chun TW, Yoder C, Hidalgo B, Belson M, Hertogs K, et al. Short-cycle structured intermittent treatment of chronic HIV infection with highly active antiretroviral therapy: effects on virologic, immunologic, and toxicity parameters. *Proc NatlAcad Sci USA* 2001, 98:15161–15166.
14. Bangsberg DR, Weiser, S., Guzman, D. and Riley, E. 95% adherence is not necessary for viral suppression to less than 400 copies/ml in the majority of individuals on NNRTI regimens. Twelfth Conference on Retroviruses and Opportunisitic Infections. Boston, February 2005 poster 616.
15. Bangsberg DR, Charlebois ED, Grant RM, Holodniy M, Deeks SG, Perry S, et al. High levels of adherence do not prevent accumulation of HIV drug resistance mutations. *AIDS* 2003, 17:1925–1932.

16. Bangsberg DR, Acosta EP, Gupta R, Guzman D, Riley ED, Harrigan PR, et al. Adherence–resistance relationships for protease and non-nucleoside reverse transcriptase inhibitors explained by virological fitness. *AIDS* 2006, 20:223–231.
17. van Meijel B, Gamel C, van Swieten-Duijfjes B, Grypdonck MH. The development of evidence-based nursing interventions: methodological considerations. *J Adv Nurs* 2004, 48:84–92.
18. Ammassari A, Trotta MP, Murri R, Castelli F, Narciso P, Noto P,et al. Correlates and predictors of adherence to highly active antiretroviral therapy: overview of published literature. *J Acquir Immune Defic Syndr* 2002, 31 (Suppl 3):S123–S127.
19. Deschamps AE, Graeve VD, van Wijngaerden E, De Saar V, andamme AM, van Vaerenbergh K, et al. Prevalence and correlates of nonadherence to antiretroviral therapy in a population of HIV patients using Medication Event Monitoring System. *AIDS Patient Care STD* 2004, 18:644–657.
20. World Health Organization. Adherence to long-term therapy: evidence for action. Geneva: World Health Organization, 2003.
21. Morse JM, Hupcey JE, Mitcham C, Lenz ER. Concept analysis in nursing research: a critical appraisal. *Sch Inq Nurs Pract* 1996,10:253–277.
22. Grypdonck MH. Het leven boven de ziekte uittillen, de opdracht van de Verpleegkunde en de Verplegingswetenschap voor chronisch zieken. Inaugurale rede Universieteit Utrecht. 3rd edn. Leiden: Spruyt, van Mantgen and de Does BV, 1996.
23. Adam BD, Maticka-Tyndale E, Cohen JJ. Adherence practices among people living with HIV. *AIDS Care* 2003, 15:263–274.
24. Golin C, Isasi F, Bontempi JB, Eng E. Secret pills: HIV-positive patients' experiences taking antiretroviral therapy in North Carolina. *AIDS Educ Prev* 2002, 14:318–329.
25. Murphy DA, Roberts KJ, Martin DJ, Marelich W, Hoffman D. Barriers to antiretroviral adherence among HIV-infected adults. *AIDS Patient Care STD* 2000, 14:47–58.
26. Murphy DA, Roberts KJ, Hoffman D, Molina A, Lu MC. Barriers and successful strategies to antiretroviral adherence among HIV-infected monolingual Spanish-speaking patients. *AIDS Care* 2003, 15:217–230.
27. Powell-Cope GM, White J, Henkelman EJ, Turner BJ. Qualitative and quantitative assessments of HAART adherence of substance-abusing women. *AIDS Care* 2003, 15:239–249.
28. Proctor VE, Tesfa A, Tompkins DC. Barriers to adherence to highly active antiretroviral therapy as expressed by people living with HIV/*AIDS*. *AIDS Patient Care STD* 1999, 13:535– 544.
29. Ryan GW, Wagner GJ. Pill taking 'routinization': a critical factor to understanding episodic medication adherence. *AIDS Care* 2003, 15:795–806.
30. Wood SA, Tobias C, McCree J. Medication adherence for HIV positive women caring for children: in their own words. *AIDS Care* 2004, 16:909–913.
31. Klitzman RL, Kirshenbaum SB, Dodge B, Remien RH, Ehrhardt AA, Johnson MO, et al. Intricacies and inter-relationships between HIV disclosure and HAART: a qualitative study. *AIDS Care* 2004, 16:628–640.
32. Laws MB, Wilson IB, Bowser DM, Kerr SE. Taking antiretroviral therapy for HIV infection: learning from patients' stories. *J Gen Intern Med* 2000, 15:848–858.
33. Schilder AJ, Kennedy C, Goldstone IL, Ogden RD, Hogg RS, O'Shaughnessy MV. 'Being dealt with as a whole person' Care seeking and adherence: the benefits of culturally competent care. *Soc Sci Med* 2001, 52:1643–1659.
34. Westerfelt A. A qualitative investigation of adherence issues for men who are HIV positive. *Soc Work* 2004, 49:231–239.

35. Wilson HS, Hutchinson SA, Holzemer WL. Reconciling incompatibilities: a grounded theory of HIV medication adherence and symptom management. *Qual Health Res* 2002, 12:1309–1322.
36. Witteveen E, van Ameijden EJ. Drug users and HIV combination therapy (HAART): factors which impede or facilitate adherence. *Subst Use Misuse* 2002, 37:1905– 1925.
37. Abel E, Painter L. Factors that influence adherence to HIV medications: perceptions of women and health care providers. J Assoc Nurses *AIDS Care* 2003, 14:61–69.
38. Sankar A, Luborsky M, Schuman P, Roberts G. Adherence discourse among African-American women taking HAART. *AIDS Care* 2002, 14:203–218.
39. Malcolm SE, Ng JJ, Rosen RK, Stone VE. An examination of HIV/ *AIDS* patients who have excellent adherence to HAART. *AIDS Care* 2003, 15:251–261.
40. Remien RH, Hirky AE, Johnson MO, Weinhardt LS, Whittier D, Le GM. Adherence to medication treatment: a qualitative study of facilitators and barriers among a diverse sample of HIVR men and women in four US cities. *AIDS Behav* 2003,7:61–72.
41. Roberts KJ. Barriers to and facilitators of HIV-positive patients' adherence to antiretroviral treatment regimens. *AIDS Patient Care STDS* 2000, 14:155–168.
42. Roberts KJ, Mann T. Barriers to antiretroviral medication adherence in HIV-infected women. *AIDS Care* 2000, 12:377–386.
43. Stone VE, Clarke J, Lovell J, Steger KA, Hirschhorn LR, Boswell S, et al. HIV/*AIDS* patients' perspectives on adhering to regimens containing protease inhibitors. *J Gen Intern Med* 1998, 13:586–593.
44. Erlen JA, Mellors MP. Adherence to combination therapy in persons living with HIV: balancing the hardships and the blessings. J Assoc Nurses *AIDS Care* 1999, 10:75–84.
45. Hill Z, Kendall C, Fernandez M. Patterns of adherence to antiretrovirals: why adherence has no simple measure. *AIDS Patient Care STD* 2003, 17:519–525.
46. Siegel K, Schrimshaw EW, Raveis VH. Accounts for nonadherence to antiviral combination therapy among older HIV-infected adults. *Psychology, health and medicine* 2000, 5:29–42.
47. Scott MB, Lyman S. Accounts. *Am Sociol Rev* 1968, 33:46–62.

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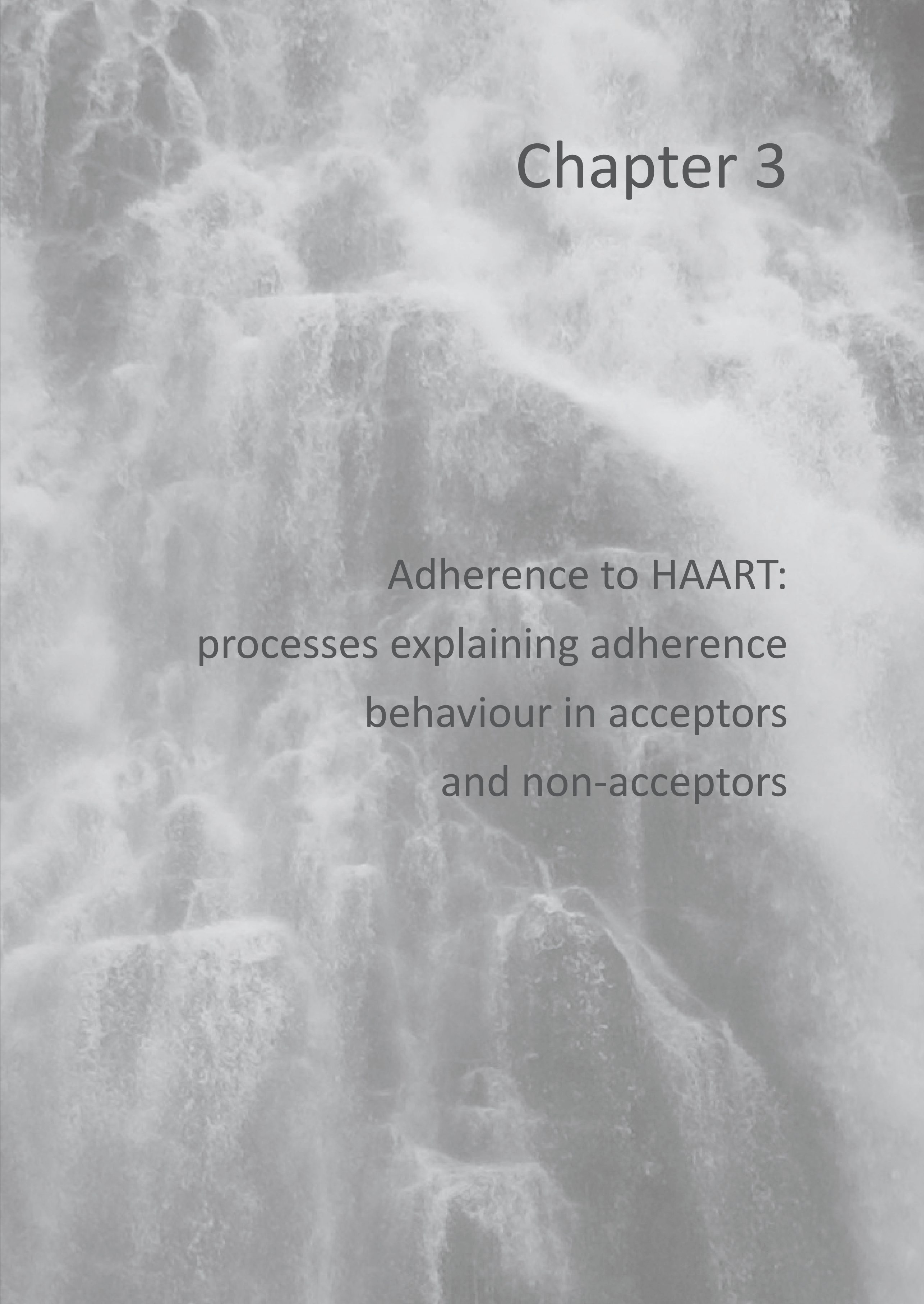
Received 3 March 2008; accepted: 20 June 2008.
AIDS Care 2009, 21:431-438



Chapter 3

Adherence to HAART: processes explaining adherence behaviour in acceptors and non-acceptors

Abstract

In order to explore and clarify the underlying processes which lead to (non)-adherence behaviour in patients treated with highly active antiretroviral therapy (HAART), a qualitative study was conducted. Thirty-seven in-depth interviews were held with 30 Caucasian HIV-positive patients. Additional data were collected by diaries kept by some participants. The analysis took place in a cyclic process; selection of themes was alternated with input of new material. Adherence to HAART is mainly influenced by the experience of being HIV positive.

Acceptance or non-acceptance of HIV leads to one of two basic stances toward adherence: ‘‘being determined to be adherent’’ or ‘‘medication is subordinate to other priorities in life’’. This stance determines the commitment to therapy and influences how patients cope with adherence. Patients who are determined to be adherent find solutions to adherence problems. Patients who are not determined to be adherent solve problems only if the solution does not compromise important aspects of their lives. Insight is provided into the manner in which prevalent themes; ‘‘start of HAART’’, ‘‘attitude toward medication’’, ‘‘HAART in daily life’’, ‘‘contextual factors’’, ‘‘health and HAART’’ and ‘‘being informed’’, influence adherence behaviour. Before starting HAART the focus should be on helping the patient to accept HIV as a part of life. The findings need to be taken into account in adherence-promoting interventions.

Keywords: HIV; antiretroviral therapy; medication adherence; qualitative study.

Introduction

In the highly active antiretroviral therapy (HAART) era, HIV- and AIDS-related mortality has declined Tremendously[1,2]. Treatment with antiretroviral therapy has significantly improved life expectancy and has turned HIV into a chronic disease. For success of treatment with HAART, adherence is of the utmost importance. Non-adherence to therapy may lead to medication failure due to incomplete viral suppression and to the development of drug resistance[3-5]. The transmission of resistant viruses makes adherence a public health concern[6,7]. On the basis of earlier studies a level of 95% or more was considered necessary to prevent the development of a resistant virus. More recent studies with other types of medication suggest that durable viral suppression can be achieved on lower levels of adherence[8,9]. Other studies suggest that the prevalence of resistance to non-nucleoside reverse transcriptase inhibitors is significantly higher at low levels of adherence than that to protease inhibitors[10,11].

Even though the regimens for (naive) patients are easier than in the past and there is a better understanding of the required adherence to prevent resistance, adherence still is the central issue as regards treatment with HAART. To attain the benefits of HAART, there is a strong need for effective adherence interventions. For the development of an intervention tailored to the individual situation, it is necessary to understand the way people manage their daily life when taking HAART and the interaction of this process with adherence[12,13]. Many quantitative and qualitative studies have been conducted to explore factors which influence adherence. Most of these studies, however, did not uncover underlying processes[14]. Furthermore, little attention has been given to the relationship between the influencing factors related to adherence[14]. The understanding of the complex patterns of medication taking and the dynamics of adherence are still under investigated[15].

This article reports the findings of a qualitative study dealing with adherence to HAART. The study was conducted to gather information from the patient's perspective on adherence to HAART in order to explore the meaning that people give to situations and clarify the underlying processes that are at play in adherence.

Method

A qualitative approach based on ‘‘grounded theory’’[16,17] was used in order to generate and explore the patient’s perspective on adherence to HAART. Thick data have been gathered allowing investigation of the processes that underlie adherence as well as addressing the diversity present in the population.

Participants

Between January 2003 and January 2006, HIV-infected patients treated with HAART were selected and recruited from three HIV treatment centres, two in Belgium and one in the Netherlands. Patients were eligible to participate if they were Caucasian, Dutch speaking, at least 18 years of age and (≥ 3 months) HAART experienced. Patients were selected by the researchers to create a diverse sample with regard to duration of treatment with HAART, sex, estimated level of adherence (measurable and un-measurable viral load) and exposure to HIV. Theoretical sampling was used as much as possible.

Selected patients were approached by the physicians or the clinical nurse specialists during hospital visits. If the patient agreed, the researcher telephoned the patient to give further information. If the patient was willing to participate, written information was sent and an appointment made. Informed consent was obtained.

Thirty-two patients were selected for the study. Two patients did not want to participate. **Table 1** shows demographic and background characteristics. Of the 30 patients 24 were men and six women. Their ages varied from 27 to71 years. The patients had been aware of their HIV status for between 1 and 19 years. The duration of treatment varied between four months and 12½ years. The medication was representative of HAART at the time of the study.

Data collection

In-depth interviews were used to elicit the experiences, perceptions and attitudes regarding HAART and adherence. A topic list (**Table 2**) based on factors known to influence adherence provided direction for the interviews[14]. The interviews had the character of open conversations. We conducted 37 interviews (one patient three times, five patients two times and the others one time). The Dutch patients were asked to keep a diary for two weeks. Eight patients kept a diary in either audio taped or written form. They documented events, feelings and thoughts related to adherence.

Table 1 *Demographic and background characteristics.*

Characteristic	Mean	Range
Age (years):	46,2	27 – 71
Men (n = 24)	45,4	27 - 59
Women (n = 6)	49,6	37 - 71
HIV positive (years)	8,33	Jan-19
HAART (years)	6,5	0,33 – 12,5
	Men (24) n	**Women (6) n**
Current living status		
Living alone	14	4
Living together with a partner	10	2
Living with child(ren)		
Yes	4	1
No	20	5
Exposure to HIV		
MSM	20	
heterosexual	2	5
IVDU	1	1
Blood products	1	
Primary income source		
Own job	14	3
Jobless/ unemployed	3	-
Disability	6	2
Retired	1	1
Therapy line		
1st	3	1
2nd	1	-
3rd	20	5

The first interviews took 45-120 minutes; repeat interviews 15-60 minutes. The repeat interviews were conducted after completion of their diary. During the data collection period memos were made containing reflections about interpretations and methods.

Interviewers

The interviews were conducted by two nurses; a PhD candidate working as a clinical HIV nurse specialist (S.V.) and a student working on a master's degree in health education (A.G.). The student interviewed from a more naive position and

Table 2 *Topic list.*

- Social support versus social isolation
- Coping versus avoidance behaviour
- Depression
- Distress
- Expectations of HAART
- Trust and belief
- Knowledge HAART and adherence
- Self-efficacy
- Stigmatization
- Disclosure
- Complexity of the regimen
- Health care system
    - Communication
    - Accessibility
    - Information
    - Relationship with health care provider
- Patient characteristics
    - Duration of the HIV infection
    - Work
    - Education
    - Living situation
- Which medication is used
- Intake requirements
- Use of practical aids

asked more confronting questions based on natural astonishment. The interview styles were not streamlined because the different approaches elicited different responses. Data from Belgian and Dutch patients were not compared. In the analysis the nature of the interviews was taken into account.

Data analysis

All interviews and the audio taped diaries were literally transcribed. The analysis took place in a cyclic process wherein established themes were alternately confronted with input of new material. All the texts were read out in full once to acquire an overall picture of the situation and were read again line by line to reveal the details. Text parts were coded and concepts were described[16-18]. These concepts were categorized according to their similarities and main themes emerged, which were described and discussed by two researchers (M.G. and S.V.). Relations between concepts and between themes were established. Developed categories were compared with the interview texts[16-19]. Brief memos supported the analysis. For the analysis the software program WINMAX-PRO[20] was used. A code tree was developed.

Validity

Validity was enhanced by creating a non-judgmental atmosphere during the interviews and emphasizing the need to learn from patients. Transcribing the interviews literally diminished chances for bias. The use of researcher triangulation in all the phases of the study enhances the validity of the interpretation.

Ethical considerations

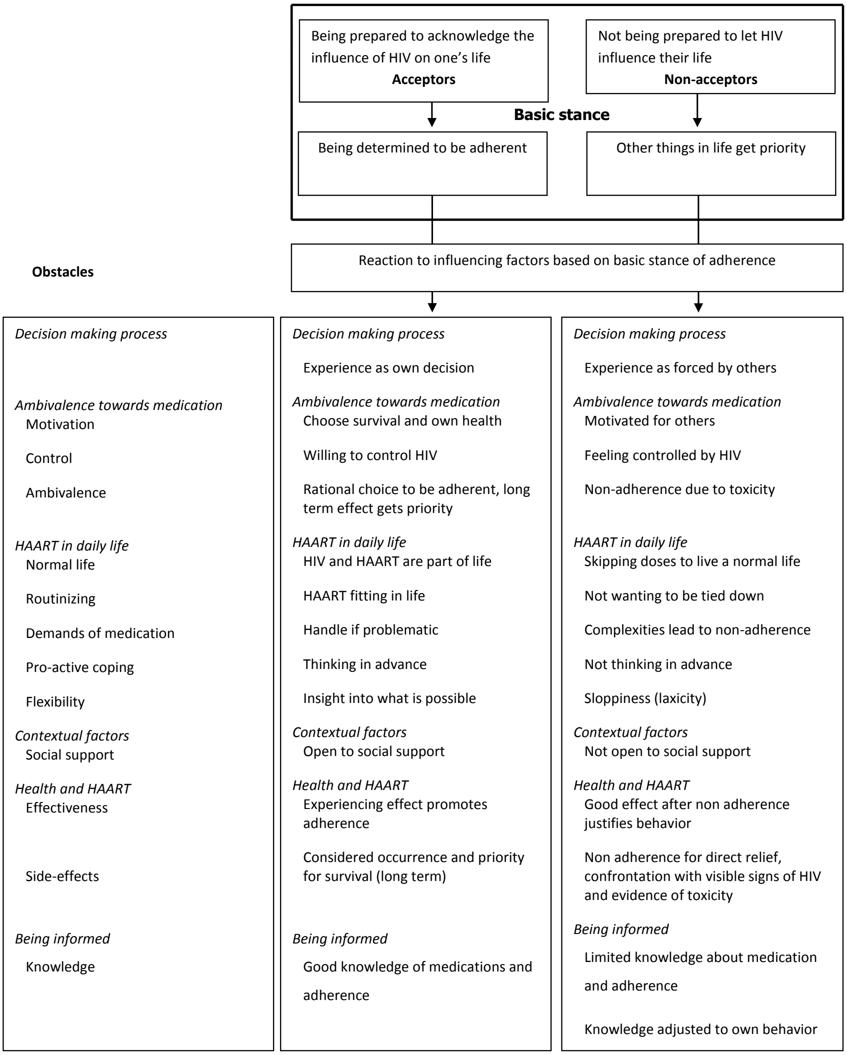
The study was approved by the relevant ethical committees.

Findings

Some patients judge themselves to be adherent, while their reported behaviour shows that they actually are not. Patients apparently judge their adherence by their own standards and these may differ considerably from the correct medication regimen. Such constructions of adherence should be distinguished from socially desirable answers. Patients are not/no longer aware of the problem. Non-adherence takes the form of forgetting, postponing, deliberately skipping a dose, not respecting food requirements or drug holidays.

Actual adherence is the result of two elements: the determination to be adherent and the way patients deal with encountered obstacles. The patient can adopt one of two basic stances: ‘‘Being determined to be adherent’’ (life requires adequate HAART) or ‘‘medication is subordinate to other priorities in life’’ (HAART should not take precedence over life).

The basic stance determines the way patients deal with temporary obstacles and other influencing factors and influences the actual level of adherence. Which basic stance is adopted is based on acceptance of being HIV positive. Patients are either ‘‘prepared to acknowledge the influence of HIV on one’s life’’ (hereafter we refer to them as acceptors) or ‘‘not prepared to let HIV influence their life’’ (hereafter the non-acceptors). Acceptance implies that the patient can face the threat of HIV and can give priority to the exigencies of therapy. Non-acceptance implies that patients cannot face the threat that HIV entails for their life and lifestyle. They want to live their life undisturbed by HIV. Hence, instances in which activities would have to be given up for HAART threaten adherence. Neither this basic stance nor the reactions to temporary obstacles are static; both can change over time. Several of the processes involved are circular. Moreover, many of the identified underlying processes and factors are interrelated and mutually affected. The results of our analysis are summarized in **Figure 1**. We elaborate below on the identified actors and processes, structured according to the two basic stances.



Obstacles		
Decision making process	*Decision making process*	*Decision making process*
	Experience as own decision	Experience as forced by others
Ambivalence towards medication	*Ambivalence towards medication*	*Ambivalence towards medication*
Motivation	Choose survival and own health	Motivated for others
Control	Willing to control HIV	Feeling controlled by HIV
Ambivalence	Rational choice to be adherent, long term effect gets priority	Non-adherence due to toxicity
HAART in daily life	*HAART in daily life*	*HAART in daily life*
Normal life	HIV and HAART are part of life	Skipping doses to live a normal life
Routinizing	HAART fitting in life	Not wanting to be tied down
Demands of medication	Handle if problematic	Complexities lead to non-adherence
Pro-active coping	Thinking in advance	Not thinking in advance
Flexibility	Insight into what is possible	Sloppiness (laxicity)
Contextual factors	*Contextual factors*	*Contextual factors*
Social support	Open to social support	Not open to social support
Health and HAART	*Health and HAART*	*Health and HAART*
Effectiveness	Experiencing effect promotes adherence	Good effect after non adherence justifies behavior
Side-effects	Considered occurrence and priority for survival (long term)	Non adherence for direct relief, confrontation with visible signs of HIV and evidence of toxicity
Being informed	*Being informed*	*Being informed*
Knowledge	Good knowledge of medications and adherence	Limited knowledge about medication and adherence
		Knowledge adjusted to own behavior

Figure 1 *Basic stance of adherence and the reaction to influencing factors.*

Acceptors

Decision-making process

The patient's perception of the decision-making process regarding HAART influences adherence. Acceptors are usually content with this process and the moment of decision. They see taking HAART as their own decision.

Ambivalence toward medication

Acceptors feel motivated to take HAART (adherently). They believe in the power of the medication to keep them alive. Starting HAART is seen as a way to get control over HIV instead of being at the mercy of HIV. Especially patients who had to wait for the start of treatment (declined CD4+) are motivated by a desire to actively beat HIV. Their determination does not mean that they are not ambivalent toward HAART. They see HAART both as lifesaving and toxic. However, ambivalence does not lead to non-adherence: acceptors rationally choose to continue medication because they give precedence to the long-term effects of taking HAART adherently. Only when side effects become unbearable will they decide to be non-adherent.

Highly active antiretroviral therapy (HAART) in daily life

Although living a normal life not dominated by HIV is important, adherence will get priority. As HIV has been given a place in life, taking medication adherently can become a routine. Routine influences adherence positively. Acceptors adjust their lives to the requirements of medication and use reminders to stay on schedule. Routine, however, can also lead to taking treatment almost automatically. Patients may not remember whether they took their medication or not. When this occurs, acceptors will look for ways to prevent lapses. Acceptors seldom think about HIV when taking HAART. They see themselves as belonging to the many that have to take medication for a chronic disease.

Taste, amount and size of the medication or food requirements can make medication intake more complex, but do not lead to non-adherence. Acceptors find solutions that fit their way of life or adapt their way of life to the requirements of the therapy. For optimal adherence patients need to think in advance and act proactively. This necessitates the capacity to think about HIV and its treatment. Acceptors have this capacity.

During the first period of taking HAART, most acceptors were very strict. Getting used to the medication leads to more flexibility. This flexibility comes from familiarity with what needs to be done. Initial anxiety is replaced by fear; rational decision making takes over.

Contextual factors

Patients who feel the need for social support to take treatment adherently will disclose their HIV diagnose to persons from whom they expect support. Support can consist of reminding that a dose needs to be taken or of setting out the medication. Most patients, however, do not need that kind of support; they remember to take their medication by themselves. Being reminded by others, however, confirms that they are doing well.

Health and highly active antiretroviral therapy (HAART)

Objective signs of the effectivity of HAART (viral load/CD4+) and a better physical condition motivate acceptors to continue to take medication adherently. Most of them follow the effects of medication closely.
When side effects occur, they choose for the long term (survival/prevent resistance). They seem to have anticipated that side effects could occur, as a consequence of being on HAART. They continue with HAART, except when they are really ill. In such cases, they will discuss solutions with a health care provider. For some acceptors long-term side effects such as lipodystrophy and atrophy make maintaining adherence more difficult, because of the experience of estrangement from one's body. This can lead to a long drug holiday; the patient prefers to put off HAART until an HIV-related disease occurs.

Being informed

Sufficient information about HIV and HAART is of utmost importance for adherence. During outpatient visits having enough time to ask questions is essential. Most acceptors have knowledge of HAART and of the importance of adherence. They know the names of their medication. Some can explain in detail why adherence is important, others can only explain it globally. Only a few did not know why adherence is necessary. Some want to have details in order to manage their own regimen, whereas others will simply comply with what is prescribed. Some acceptors' reports of their behaviour seem to reflect misconceptions, leading to deviations from the proper regimen.

Non-acceptors

In those patients who are not prepared to let HIV influence their life, mainly the same factors are at play; however, they have different consequences.

Decision-making process

The advice to start HAART seriously threatens the possibility of living a life undisturbed by HIV. Some patients need to push HIV as rapidly as possible to the margin of their existence. In some situations the confrontation with HIV due to HAART leads to psychological problems which influence adherence negatively. The advice to start HAART forces some patients to actively cope with HIV.

Many non-acceptors feel they did not make the decision to start HAART themselves, but started because the doctor told them to do so. This influences their adherence negatively and they use it to explain their non-adherence.

Ambivalence toward medication

When HAART is started without a visible risk (based on CD4+count without HIV-related symptoms) the motivation to take treatment (adherently) may be low. Some patients only feel motivated to take the medication because they want to stay alive for others; (new) partner, parents or children.

Medication can be seen as HIV being controlling life. The fact that HAART has to be taken adherently puts non-acceptors under pressure. They do not want to be forced to do things. By being non-adherent they show that they are in control.

The names given to the medication clearly express ambivalence (*‘‘rotten pills’’, ‘‘very malicious pills’’, ‘‘bloody stuff’’, ‘‘chemical mess’’, ‘‘damn things’’*). Ambivalence toward medication seems to be stronger in the absence of HIV-related symptoms at the start of HAART. Ambivalence can lead to non-adherence or a drug holiday, especially when side effects occur.

Highly active antiretroviral therapy (HAART) in daily life

The need to live a life undisturbed by HIV makes disruptions due to HIV status difficult to deal with. Sometimes non-acceptors choose to skip a dose in order to avoid confrontation with HIV.

Living as one desires or giving into the inspiration of the moment is of utmost importance to some patients. Deviations from usual activities or a different weekend rhythm may lead to conflicts in the choice of a scheme. These conflicts are not easily resolved when a patient does not really want to make necessary changes in activities or lifestyle.

Adherence is facilitated when medication fits into one’s lifestyle. Patients with hectic/irregular lifestyle have more difficulty attaining adherence. The use of reminders is seldom accepted. Indeed, patients who need routine most have the most resistance against creating routine or using adherence aids. or non-acceptors adherence can be influenced by the characteristics of the medication, such as taste, number and size of the pills. Food requirements limit flexibility and thereby influence adherence. Demands of life are (easily) given priority over the demands of treatment. Proactive coping to preserve adherence is limited. Non-acceptors do not want to pay extra attention to their medications. They do not want to ponder solutions to the conflicts between their activities and the requirements of HAART.

Although medication may have been taken more or less properly in the beginning, after some time they become more lax and give priority to other activities.

Contextual factors

Most non-acceptors do not disclose their HIV diagnosis and therefore will not receive social support in taking treatment adherently. Only some patients who feel the need for practical adherence support will disclose their HIV diagnosis to persons of whom they expect support. Being reminded by others can also lead to non-adherence. It can be seen as a statement of incompetence. Being reminded is experienced as an unwelcome intrusion.

Health and highly active antiretroviral therapy (HAART)

Objective signs (viral load/CD4+) of the effectiveness of HAART and a better physical condition motivate patients to continue to take medication (adherently). However, when treatment seems to have good effect in spite of non-adherence, the motivation to be adherent disappears. Patients conclude that because they are apparently an exception, and thus do not need to take HAART according to the rules.

Side effects of HAART that cause visible signs (e.g. lipodystophy) of the illness threaten secrecy and disturb normal life. In order to avoid these side effects, patients become non-adherent. Side effects interpreted as a sign that the medication is ‘‘too much’’ for the body, leads to non-adherence.

Being informed

Non-acceptors have a more limited knowledge of HAART and adherence. Only some of them can name their medications. Many non-acceptors consider themselves as adherent, but judge their adherence against a personal version of the rules. It seems that they justify their behaviour by adjusting their knowledge about adherence to their own behaviour.

Discussion

This study makes clear that adherence and non-adherence are complex phenomena influenced by interrelated factors and processes. Some of these are related to the nature of the disease, the mode of transmission and to the specifics of the treatment (strict requirements, disturbing side effects). The study not only confirmed which influencing factors are at play in adherence[14], the in-depth analysis also revealed underlying processes of adherence to HAART.

The basic stance with regard to adherence is based on the acceptance of being HIV positive. This basic stance defines what gets priority, therapy or desired lifestyle, and influences reactions to obstacles to adherence. The reactions are not static and can change over time. Consequences of the choices made provide new input that can affect the basic stance. Many processes that are at play in adherence to HAART are therefore circular.

Other qualitative studies have found the issue of priority of life or treatment conditioned by the acceptance of the disease to be a basic issue in adherence. The basic stance is akin to behavioural intentions as used in social-cognitive models of behaviour[21,22]. However, in our study we have used determination rather than intention. It is, indeed, not so much the consequence of a decision concerning a specific behaviour, but an attitude toward one's dealing with the (hardships) caused by the disease.

Because of the number and depth of the interviews we could make use of thick data. However, only those patients could be included who were willing to talk about being HIV positive. Patients who cannot face the confrontation at all will not participate in qualitative studies. The sample and thus the findings, however, restricted to Caucasians in countries with a highly accessible HIV/AIDS care.

Implications

Self-report of adherence seems unreliable if one asks whether HAART is taken as prescribed. Patients should be asked to describe their exact behaviour. Indeed, an individual's interpretation of ''good adherence'' can be based on cognitive dissonance or limited knowledge of what is correct adherence behaviour.

The basic stance should be examined before HAART is started. Risk assessment for non-adherence should be taken it into account. Support needed and appropriate interventions will differ according to the basic stance and the circumstances in the life of the patient. In acceptors, it is meaningful to start preparing for treatment and adherence early.

For all patients the choice of medication needs to be based on what fits best into their lifestyle. The acceptors need practical advice on how to behave in specific situations when obstacles occur. Both patients and providers should be aware that routine can have both positive and negative effects.

For non-acceptors, if medically possible, the focus should be on helping the patient to accept the place of the disease in life before starting HAART. If this is not possible or if the role of HIV in life remains unaccepted, attention should be focused on minimizing interference and increasing skills to minimize conflicts. Patients should be prepared to deal with situations that threaten adherence. It can be helpful to anticipate on problematic situations. Proactive coping[23,24] using ‘’if then’’ questions can be helpful[25-27].

The regimen has to be discussed on a regular basis to detect adjustments and information should be repeated. Attaining acceptance of the role of HIV in one’s life is not only important to the quality of a patient’s life, but also to the success of treatment. How to change a non-acceptor into an acceptor is an important question which requires further research.

Acknowledgements

Thanks to all the Dutch and Belgian patients who participated in this study.

References

1. Mocroft A, Ledergerber B, Katlama C, Kirk O, Reiss P, d'Arminio Monforte A et al.: Decline in the AIDS and death rates in the EuroSIDA study: an observational study. *Lancet* 2003, 362: 22-9.
2. Palella FJ, Jr., Delaney KM, Moorman AC, Loveless MO, Fuhrer J, Satten GA et al.: Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. *N Engl J Med* 1998, 338: 853-60.
3. Hecht FM, Grant RM, Petropoulos CJ, Dillon B, Chesney MA, Tian H et al.: Sexual transmission of an HIV-1 variant resistant to multiple reverse-transcriptase and protease inhibitors. *N Engl J Med* 1998, 339: 307-11.
4. McNabb J, Ross JW, Abriola K, Turley C, Nightingale CH, Nicolau DP: Adherence to highly active antiretroviral therapy predicts virologic outcome at an inner-city human immunodeficiency virus clinic. *Clin Infect Dis* 2001, 33: 700-5.
5. Race E, Dam E, Obry V, Paulous S, Clavel F: Analysis of HIV cross-resistance to protease inhibitors using a rapid single-cycle recombinant virus assay for patients failing on combination therapies. *Aids* 1999, 13: 2061-8.
6. Boden D, Hurley A, Zhang L, Cao Y, Guo Y, Jones E et al.: HIV-1 drug resistance in newly infected individuals. *Jama* 1999, 282: 1135-41.
7. Wainberg MA, Friedland G: Public health implications of antiretroviral therapy and HIV drug resistance. *Jama* 1998, 279: 1977-83.
8. Bangsberg DR, Weiser S, Guzman D, Riley ED: 95% Adherence Is Not Necessary for Viral Suppresion to Less than 400 Copies/mL in the Majority of Individuals on NNRTI Regimens. Paper presented at the 12th conference on Retroviruses and opertunistic infections, 22-25 Febrary 2005.
9. Dybul M, Chun TW, Yoder C, Hidalgo B, Belson M, Hertogs K et al.: Short-cycle structured intermittent treatment of chronic HIV infection with highly active antiretroviral therapy: effects on virologic, immunologic, and toxicity parameters. *Proc Natl Acad Sci U S A* 2001, 98: 15161-6.
10. Bangsberg DR, Charlebois ED, Grant RM, Holodniy M, Deeks SG, Perry S et al.: High levels of adherence do not prevent accumulation of HIV drug resistance mutations. *Aids* 2003, 17: 1925-32.
11. Bangsberg DR, Acosta EP, Gupta R, Guzman D, Riley ED, Harrigan PR et al.: Adherence-resistance relationships for protease and non-nucleoside reverse transcriptase inhibitors explained by virological fitness. *Aids* 2006, 20: 223-31.
12. Grypdonck MH: *Het leven boven de ziekte uittillen; de opdracht van de Verpleegkunde en de Verplegingswetenschap voor chronisch zieken. Inaugurale rede Universietei Utrecht*, 3 edn. Leiden: Spruyt, Van Mantgen & De Does BV; 1996.
13. van Meijel B, Gamel C, van Swieten-Duijfjes B, Grypdonck MH: The development of evidence-based nursing interventions: methodological considerations. *J Adv Nurs* 2004, 48: 84-92.
14. Vervoort SC, Borleffs JC, Hoepelman AI, Grypdonck MH: Adherence in antiretroviral therapy: a review of qualitative studies. *Aids* 2007, 21: 271-81.
15. Sankar A, Golin C, Simoni JM, Luborsky M, Pearson C: How qualitative methods contribute to understanding combination antiretroviral therapy adherence. *J Acquir Immune Defic Syndr* 2006, 43 Suppl 1: S54-S68.
16. Glaser BG, Strauss AL: *The discovery of grounded theory, strategies for qualitative research*. Chicago: Aldine; 1967.

17. Wester FPJ: *Strategieën voor kwalitatief onderzoek Strategies for Qualitative Research. Bussum: Coutinho*, 1th edn. Bussum: Coutinho; 1995.
18. Burnard P: A method of analysing interview transcripts in qualitative research. *Nurse Education Today* 1991, 11: 461-466.
19. Morse JM, Hupcey JE, Mitcham C, Lenz ER: Concept analysis in nursing research: a critical appraisal. *Sch Inq Nurs Pract* 1996, 10: 253-77.
20. Kuckartz U: *winMAX Scientific Text Analysis For the Social Science*. Berlin: BSS; 1998.
21. Ajzen I, Fishbein M: *Understanding attitudes and predicting social behavior.* NJ: Prentice-Hall: Englewood Cliffs; 1980.
22. Ajzen I: Residual effects of past on later behvior; Habituation and reasonded action perspectives. *Personality and Social Psychology Review* 2002, 6: 107-122.
23. Aspinwall LG, Taylor SE: A stitch in time: self-regulation and proactive coping. *Psychol Bull* 1997, 121: 417-436.
24. Thoolen B, De RD, Bensing J, Gorter K, Rutten G: Beyond Good Intentions: the development and evaluation of a proactive self-management course for patients recently diagnosed with type 2 diabetes. *Health Educ Res* 2008, 23: 53-61.
25. Gollwitzer PM, Brandstatter V: Implementation intentions and effective goal persuit. *Journal of Personality and Social Psychology* 1997, 73: 186-199.
26. Gollwitzer PM: Implementation intentions - Strong effects of simple plans. *American Pshycholgist* 1999, 54: 493-503.
27. Gollwitzer PM, Fujita K, Oettingen G: Planning and implementation of goals. In *Handbook of self regulations: Research, Theory and Application*. Edited by Vohs KD, Baumeister RF. New Uork: Guilford Press; 2004:211-228.

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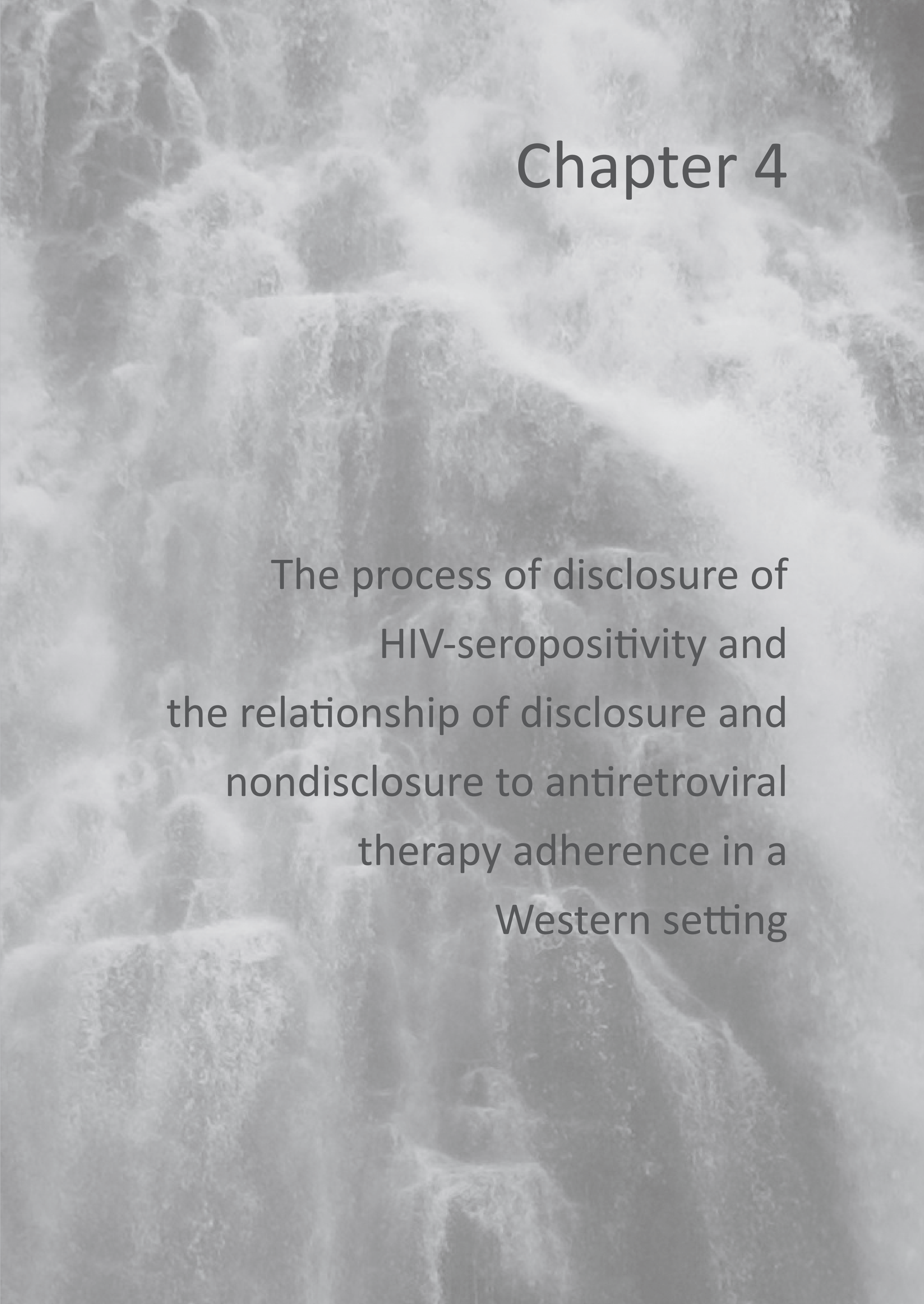

Chapter 4

The process of disclosure of HIV-seropositivity and the relationship of disclosure and nondisclosure to antiretroviral therapy adherence in a Western setting

Abstract

A qualitative study was conducted using a grounded theory approach to explore the motives and processes of disclosure and nondisclosure behaviour in HIV patients on antiretroviral treatment. The influence of disclosure on adherence was investigated. Fifty interviews were held with 44 persons infected by HIV from the Netherlands and Belgium. Disclosure was found to be a lifelong central theme. The respondents saw disclosure as preferable to nondisclosure. The decision to disclose was mainly influenced by the acceptance or non-acceptance of being HIV-positive. Disclosure and nondisclosure were not always rational choices and often a reaction to an emotional need. Different disclosure patterns are seen in the 'dismay', 'realization' and 'affirmation' phases of being HIV-positive. Other considerations at play in each phase were influenced by the patient's personal manner of coping and degree of acceptance of HIV. Disclosure is not static, but an ongoing issue. Disclosure makes adherence easier.

Keywords: HIV, antiretroviral therapy, disclosure, adherence, qualitative study

Introduction

Disclosure is a central theme for all people infected by HIV. Disclosure of being HIV-infected obviously leads to openness about past behaviour or being a victim and reveals information about a potentially life-threatening, sexually-transmitted and stigmatizing illness. Nondisclosure of one's HIV-status influences adherence to highly active antiretroviral therapy (HAART) negatively. High levels of adherence are necessary for treatment with HAART to be successful[1-3]. A dose of medication is easily skipped if HIV-status is not disclosed and it is not possible to take medication out of sight of others[4,5]. Social support has been identified as affecting adherence positively, mainly when this support is practical[4,5]. Social support obviously requires disclosure.

A recent study of HIV-related stigma in the Netherlands reports that more than half of the respondents were confronted with stigmatization after disclosing that they were infected with HIV[6]. In the field of HIV, an increasing number of quantitative studies on disclosure are focusing on factors influencing disclosure and specifically on the effects of disclosure such as stigma, regret, violence, psychological adjustment as well as functioning and social support[7-19]. Several qualitative studies have been conducted to learn about the disclosure process and the role of disclosure in coping with HIV[14,20,21].

These quantitative studies show that high percentages of participants disclose their HIV-seropositivity. This percentage differs per type of relationship, i.e sexual partners, family members, friends, healthcare providers and co-workers[7-10,13-19]. Deciding whom to reveal one's HIV-status to is influenced by the relationship with the person in question and the anticipated response of that person[14-16]. If the recipient is aware of the patient's sexual orientation, disclosure becomes more likely for men-who-have-sex-with-men (MSM)[16,17]. Nondisclosure seems to be chosen out of fear of social consequences due to stigmatization[8,15,16,18]. Protecting others from emotional distress is another reason for nondisclosure[8,16]. Mixed results were found on the relationship between health status and disclosure[11,15,16]. Disclosing sensitive information such as one's HIV-seropositiveness has been found to be beneficial to one's health and can play an important role in coping with HIV[21-23]. Disclosure of HIV decreases stress levels[21,23] and seems to facilitate adjustment to HIV[19]. Perceived stress associated with disclosure is seen as being related to both disclosure and social support[7]. Other studies, however, have found that some patients regret their decision to disclose because of the social consequences or reactions they experience[11,15,16,18]. Studies on regret of disclosure showed high percentages of no regret or low levels of regret[12,16,18].

The qualitative study of Holt et al.[21] provided information about the role of disclosure per diagnostic phases of HIV-infection. The study concluded that disclosure is not static, but an ongoing issue.

The literature shows that disclosure is a complex issue. However, studies usually do not address how people with HIV make disclosure choices. In order to tailor the advice to the specific patient situation, more knowledge is needed about the role of disclosure and nondisclosure in the lives of HIV-infected patients, and how decisions about disclosure are made.

In this article, we want to contribute to deepening the insight into the motives and processes of disclosure and nondisclosure, and its role in adherence to highly active antiretroviral therapy (HAART). In-depth qualitative studies allow us to investigate the basic processes at play in disclosure and its relation to adherence, as well as to explore disclosure behaviour in detail.

Purpose

The present study is part of a larger study that is being undertaken to provide in-depth insight from the patient's perspective and to clarify the underlying processes which lead to adherent and non-adherent behaviour in patients treated with HAART. A qualitative methodology based on 'grounded theory' was chosen in order to generate and explore the patient's perspective, thoughts and behaviour regarding adherence, and to allow the investigation of the processes that underlie adherence[24-27]. Respondents' disclosure and non-disclosure behaviour, thoughts and choices are central themes in the interviews as part of living with HIV, and in relation to adherence to antiretroviral therapy.

The aims of the present study are twofold: to explore and understand the role of disclosure and nondisclosure of HIV-status in the lives of HIV-infected patients who are being treated with HAART, and to explore the relationship of disclosure and nondisclosure on the process of adherence to HAART.

As the aim of our study was to explore disclosure in conjunction with adherence, no specific insights are given regarding disclosure in sexual relationships.

Methods

Respondents

Forty-four patients were selected. Two patients did not want to participate.

Table 1 presents the demographic and background characteristics of the respondents. Thirty-eight men and six women participated.

Table 1 *Demographic and background characteristics*

	Men (n=38)		Women (n=6)	
	Mean	**(range)**	**Mean**	**(range)**
Age (years)	47.7	*(27-67)*	49.6	*(37-71)*
HIV positive (months/years)	5.6	*(3m-19y)*	10.6	*(8y-18y)*
HAART (months/ years)	3.7	*(3m-11y)*	7.9	*(1y-12.5y)*
	n		n	
Current living status				
Living alone	17		4	
Living with a partner	20		2	
Living with mother	1		-	
Living with child/ren				
Yes	4		1	
No	20		5	
Exposure to HIV				
MSM	34			
heterosexual	2		5	
IVDU	1		1	
Blood products	1			
Primary income source				
Own job	22		3	
Jobless/ unemployed	3		-	
Disability	9		2	
Retired	4		1	
Therapy line				
1st	17		1	
2nd	1		-	
3rd	20		5	

Their ages varied between 27 and 71 years. They had been aware of their HIV-status for between one and 19 years. Treatment duration varied between three months and 12.5 years. The percentage of men (86.4%) in our study was higher than that of the HIV population followed in treatment centres in the Netherlands (78.8%), and Belgium (61.1%)[28,29].

Procedure

HIV-infected patients treated with HAART were selected, recruited and interviewed. Inclusion took place between January 2003 and May 2008. Patients were eligible to participate if they were Caucasian, Dutch-speaking, at least 18 years of age and treated with HAART. We selected patients from four HIV treatment centres, two in the Netherlands and two in Belgium. In selecting and approaching patients the prevailing rules relating to protection of privacy and informed consent were followed. Potential respondents were selected by the researcher to create a diverse sample with regard to duration of treatment with HAART, sex, estimated level of adherence and exposure to HIV. Theoretical sampling was used insofar as possible. Selected patients were approached by a physician or nurse consultants during outpatient department visits. Respondents in the Netherlands were subsequently approached by phone by the researcher for further information and were invited to participate. If the patient was willing to participate an appointment was made. Informed consent was obtained at the first appointment. In Belgium, the researcher had an appointment with the respondents directly after the consultation with the physician. The researcher explained the research to the patient and obtained informed consent. The study was approved by the relevant ethical committees.

Data collection

In-depth face-to-face interviews were held about issues related to adherence and the factors that influence it, including disclosure in the context of living with HIV. An interview guide was used (**Table 2**). Respondents were asked if they had disclosed their HIV-status; to whom they had disclosed it, why they did or did not disclose it, how they experienced the actual ‘telling’, and, what in their opinion, may influence adherence. The interviews were conducted as much as possible as open conversations leaving space for further subjects to arise spontaneously.

We carried out 44 interviews. The interviews were conducted by three researchers, all PhD or Master’s students. Two of them were working as HIV-nurse specialists. After the interviews, memos were made containing reflections useful for later interpretation. The interviews took 45-120 minutes. All interviews were conducted at patients’ homes, except for two in Belgium and two in the Netherlands which were conducted at the outpatient department.

Table 2 *Interview guideline*

- Social support versus social isolation
- Coping versus avoidance behaviour
- Depression
- Distress
- Expectations of HAART
- Trust and belief
- Knowledge HAART and adherence
- Self-efficacy
- Stigmatization
- Disclosure
- Complexity of the regimen
- Health care system
    - Communication
    - Accessibility
    - Information
    - Relationship with health care
    - Provider
- Patient characteristics
    - Duration of the HIV infection
    - Work
    - Education
    - Living situation
- Medication used
- Intake requirements
- Use of practical aids

Data analysis

All interviews were tape recorded and literally transcribed. The interview texts were first read in full to acquire an overall view of the situation and then re-read to reveal the details. Text sections were coded and concepts were described[25-27]. These concepts were categorized according to their similarities and a number of important themes emerged which were then described and discussed by two researchers. An initial code tree was developed after analysis of 15 of the interviews. The further interviews were analysed and the initial ideas checked. Relationships between concepts and between themes were established, and the categories that resulted were compared with the interview texts. Parallel with this analysing process the code tree was refined, verified and reconstructed. A definitive analysis was developed. Throughout the whole process analysis was validated by researcher triangulation. The software program WINMAX-PRO[30] was used to support the analysis process.

Results

The process of disclousre and non-disclosure of HIV

From the interviews, it was clear that disclosing one's HIV-status is experienced as difficult. All respondents found disclosure to be an important issue directly after the HIV-diagnosis. They had to decide whether or not to disclose their HIV status and to whom. At the time of interview all respondents had disclosed to at least one person. The number of persons to whom they disclosed varied as did their relationship with these persons. Disclosure included both making the decision to disclose and the actual process of telling. The telling itself was experienced as an emotional event that requires courage. Respondents feared the reactions of others and were afraid of their own reaction to this reaction. Not knowing how and when to tell can lead to not revealing one's status to others.

> *Well yes, it was very difficult to tell them that I, er, had it.*

Most respondents said that HIV is something that should not have happened to them. They found it difficult to see themselves as a person behaving in a manner that led to an HIV-infection. With nondisclosure they avoided disclosing that they are seropositive.

> *It is always associated with not practicing safe sex and irresponsible behaviour, and, er, most people think of it in that way.*

Most respondents felt that, in principle, disclosure is to be preferred, but at the same time some found it a hard road to travel: these respondents could neither disclose nor come to the conclusion that it is better not to disclose.

> *P: Yes but I know that this subject is still taboo everywhere… I don't want to be bothered with it. No (…) if you don't do anything then everything stays as it is, and if people then do mention it, it causes them problems, they continue to be upset because most people keep it quiet. (…) I absolutely do not want to be bothered with this (…). I have thought about this long and hard, it is a conscious decision.*
>
> *P: I think we should be working towards a world in which you should be able to do this, but still I don't advise anyone to do this. Yes, I know it sounds hypocritical, but that is my true opinion.*

The fact that disclosure is irreversible was a weighty argument in respondents' decision-making process.

The decision whether or not to reveal one's HIV-positive status, and to whom and when depends on various factors. There are different phases of being HIV-positive that have a different impacts on disclosure 'choices'. The acceptance or non-acceptance of being HIV-infected is seen as influencing disclosure behaviour as well as influencing adherence to HAART[31].

Disclosure in the phase of dismay, after hearing the HIV-diagnosis

Hearing the HIV-diagnosis led to different disclosure behaviours. For most respondents the diagnosis and the shock it causes were so enormous that this had led to strict nondisclosure *'I cannot tell anyone'*. They first needed time to learn to cope with the diagnosis, the guilt that accompanies it and the reason for becoming HIV-positive, before they could decide whether they want to disclose their HIV-positive status. The diagnosis created chaos in their lives. Only their partner was informed.

Other respondents felt an emotional need to share the news that has turned their life upside down.

> *When I heard, I told them immediately (…) so I could tell them what was happening to me.*

At this phase they disclosed only to persons they are close to and from whom they expect emotional support. For others it was difficult to keep HIV a secret as it is an overwhelming truth. Disclosure was not so much a rational decision, but the response to an urge. Not being able to suppress the urge to tell the news can lead to clumsy disclosure and sometimes had led to full openness. Consequences were not considered at this point. One respondent disclosed, because he was angry that this had happened and wanted to hurt others by throwing the diagnosis in their face.

This phase was short for those respondents who already suspected they were HIV-positive.

Disclosure in the phase of realization of being HIV-positive.

Disclosure was reconsidered in a new phase in which HIV is felt to be definitive. The decision to disclose or not is influenced by the manner of coping and the degree of acceptation of HIV. Respondents who were *still adapting to the idea of being HIV-positive* found it very difficult or impossible to disclose their HIV status. They said they might reconsider it at a later time. This confirms that they saw disclosure as the ideal situation. Some of them mentioned possible future reasons/situations that could eventually lead to disclosure, e.g. becoming ill.

Other respondents did not feel they should disclose at the present time and felt that they possibly never would, and others were determined never to.

> *I: the choice not to tell people? P: I haven't made that decision yet and I don't think I will. We all think it's better not to.*

Some respondents who had only disclosed to their partner said that they wanted to disclose sometime in the future. They waited for a suitable moment, but when one presented itself, they hesitated and let it go by; disclosure was postponed time after time. Not the decision, but rather the actual act of disclosing was too painful or too risky.

Respondents who *accepted being HIV-positive (acceptors)* in this phase made rational choices about whether to disclose or not and to whom to disclose. They formed, or tried to form, an idea of the opinion of the people to whom they were considering disclosing and take this into account when making the decision. Whether or not the other person is aware of past behaviour and sexual preference played a role in this decision. The respondents' decision whom to tell was influenced by their perception of the relationship and its closeness; considerations differed according to the closeness of the relationship. Closeness here refers to the respondents' perceptions, not to the formal ties. Parents, siblings and friends can all be close or not. Most felt that close relations/loved ones should know as HIV is part of their life.

> *Yes, I've told my friends because, well because I'm much closer to them actually. They come here and we go out together… it's natural to share your emotions with them.*

In true relationships such an important matter cannot be kept secret as this would preclude authenticity. Being authentic in the relationship seems to be the basis for this rational decision.

> *I told someone about it recently, they didn't know I was seropositive and I told them and I also said I am telling you because I think you should know, you are important to be and I think you should know.*

However, if respondents expect that being confronted with their HIV status would be too painful for others, they may decide not to reveal their HIV status and thus spare others misery and sorrow. In deciding whether or not to disclose to family members, respondents anticipated the effect that disclosure would have on the relationship. Most acceptors decided that their mother should know, unless they thought it would be too upsetting for her. Several respondents wanted to avoid re-traumatizing their parents, as their coming-out as a homosexual had already been dramatic enough. The urge to be authentic while at the same time not to cause pain sometimes presented a serious dilemma. In a new relationship respondents who accepted HIV in life were likely to disclose, as HIV is an important part of their life. Disclosing in new relationships carries the risk of a break-up, a risk they considered necessary to take.

Deciding not to disclose one's HIV-status to people less close was based on avoiding problems and undesired behaviour of others towards them. They wanted to prevent wild stories being told behind their back.

> *(…). That someone can say' no problem, so many people are infected. You can grow old taking today's medicines', and at the same time talking and gossiping about you behind your back. Saying bad things about you. 'And have you heard that he's got it too, that he's taking medicines.'*

Nondisclosure spares them the confrontation with the emotions of others.

> *(…) that is the reason for not telling people at the moment, because it starts some sort of process and then, you know, I have to explain about it to that person, give them guidance as it were, even though I am in a completely different phase now.*

The need for social support was another reason for respondents to disclose to persons from whom they expect support.

Some acceptors chose to disclose to people who were not close to them as a strategy of normalization; being open about HIV affirms that being HIV-positive is not so awful. They wanted to see HIV as normal and something that need not be taboo. They did not mind possible consequences.

Respondents who did *not accept* their HIV-status in this phase *(non-acceptors)* will disclose only to a few people. In doing so they avoided the risk of being seen only as an HIV-infected person.

Hmm, yes that was actually because I er, er, didn't want them to see me in that way, I didn't want to be branded. I just wanted to be name and not name with that disease.

By not disclosing they protected themselves from possible (and repeated) confrontation with HIV and its stigma and associations with mortality.

They disclosed to others only if it became unavoidable (partner/child). Some of the respondents who decided not to tell some close family members (mother/son) involved other close family members (partner/son) in a conspiracy of nondisclosure. Nondisclosure protected them from well-meant meddling and from the concern of others that is out of their control. They did not want to be seen as pitiful. One of the non-acceptors chose to disclose the HIV status to those close to them as a test of the relationship. Disclosure was used to affirm or disaffirm the relationship. The respondent did not mind that this could lead to a break in the relationship. If the other person does not accept him, then the relationship is of little value.

> *'Don't you want any more contact? OK, then you won't be the first to disappear off the scene by a long way. You get used to it. You get to know your real friends when you are in trouble.*

Non-acceptors explained that they will not disclose because being HIV-positive is an absolutely private matter that is of no concern to others. Consequently, by not revealing their HIV-status they remove it from the realm of interpersonal relationships and so avoided confrontation with their disease. Respondents using this strategy seem not to experience stress from nondisclosure and were determined not to tell.

> *Then everyone starts asking for all the details, too many questions, I just couldn't be bothered with all that stuff.*

Both *acceptors and non-acceptors* often gave the fear of stigma in their social life and at work as a reason for nondisclosure. Also the fear of losing of control over the information was a reason for nondisclosure. After revealing their HIV status, they don't know what another person will do with the information. The knowledge that others want to share the information was seen as unavoidable and strengthens their determination not to disclose.

> *I hate prejudice and this is exactly what you create.*

Disclosure in the phase of affirmation of being HIV seropositive

Becoming sick, starting HAART and the development of side effects can all be occasions for reconsidering disclosure. These occurrences make HIV apparent, affirm the diagnosis and increase the risk of accidental disclosure. Secrecy was endangered by the medication itself, the necessity of regularly taking medication, or having to take it at unusual times or with food, using a reminder (that can reveal a pattern), and visible side effects. Pharmacy visits to refill prescriptions were experienced by respondents as endangering secrecy. Also hospital visits may threaten secrecy as it is possible to run into people to whom respondents did not want to disclose.

> *Another thing I found very difficult to do was pick them up at the pharmacy. You know, what is someone like me doing leaving the pharmacy with three boxes of pills. It's the secrecy more than anything. All is revealed by the medicines.*

Acceptors who were faced with the threat of accidental disclosure were forced to reconsider the pros and cons of disclosure or nondisclosure. Balancing what has most weight was helpful in making a decision to disclose or to find solutions to handle these threats. Needing to take medicine out of sight of others or having to contrive reasons for leaving social or other activities were reasons to consider disclosure.

For *non-acceptors,* having to start treatment can be a reason for deciding to disclose, mainly to get practical support in adhering to treatment. If they were faced with the threat of accidental disclosure, they often tried to find ways to avoid disclosure, such as postponing taking their medication or giving another reason for being in the hospital.

> *At the beginning, at the beginning, let me see; for example I would be out having dinner with colleagues and we'd be deep in conversation and I'd think, well I can't leave now, just go. It's eight o clock, oh I'll just leave it. It was a time I just couldn't do it.*

Some respondents chose to disclose to others and - strikingly often - to children that they are ill, but not that they have HIV. Infections for which they have been treated or an HIV-associated disease are given as reasons for taking medication.

> *I:Did you mention something else for which you were taking it? P: Yes, they all know that I have had illness and they don't ask any questions.*

They explained that this choice is not seen as lying. A respondent noted:

> *(…) because no-one knows what it is for. So I always say that it is for my sinuses, because that is closest to the truth, I don't say anything more specific, but everyone thinks oh poor name (…) he always has to take pills (…).*

Respondents did this because they did not want to disclose their HIV status but were determined to adhere to their medication regime. Indeed, circumstances did not always allow for taking medication in secrecy. They took medication in view of others, not out of choice but out of necessity.

Disclosure behaviour in relation to adherence to HAART

From the interviews, it was clear that for the majority of the respondents to take medication out of sight of others is a constant problem if other people are around at the time medication has to be taken. Most of the respondents who accepted being infected with HIV decided to take treatment out of sight of those not close to them, even if they are open about their HIV. When friends/family members to whom they had disclosed were around, they usually took medication openly. Acceptors who did not disclose usually take medication out of sight of others, they try to be at home to take medication and choose a time when they expect others not to notice or go to the bathroom to take it; they are very inventive in devising solutions. This inventiveness makes it possible to be adherent.

Respondents, who are non-acceptors and did not disclose, were tempted to skip a dose or take a dose much later if it was not possible to take medicine out of sight of others. They experienced the risk of disclosure as too great and in their mind this seemed to outweigh the consequences of non-adherence.

Overall, the need for practical support in adherence led to more openness about HIV status with persons from whom support is expected. Support consisted of a reminder that a dose needed to be taken or of setting out the medication. In non-acceptors, being reminded was sometimes experienced as a statement of incompetence leading to postponing or skipping the dose altogether.

Based on the interviews, four patterns of disclosure related to adherence can be distinguished. In the first pattern ‘*others know about HIV and being fully open’,* the respondents did not have any problems concerning where, when and how often HIV is discussed.

> *But as you will understand, I don’t try to hide it. If I was sitting over there in that chair or the king could be standing in front of me, when I need to take it, I take it. The king could be standing in front of me, or a tramp could be standing in front of me, I don’t care.*

They experienced HIV like any other disease. Immediate circumstances did not influence adherence and they were open to social support, which may also consist of practical help to optimize adherence. They were able to make full use of reminders.

In the second pattern in which ‘*others know about HIV and being open to a limited extent’,* respondents did not want others to confront them with their HIV status. They avoided discussing HIV. HIV was not really accepted totally, although their HIV status had been disclosed by some.

> *I: and what is the reason that you won’t take your medication while they are around? P: I don’t know, it’s all psychological, that is, I don’t know why it is my biggest problem - swallowing pills with other people around.*

Restricted disclosure made social support possible if required by the respondents. They preferred taking medication out of sight of others. However, if this was not possible, it was not a major problem. In those situations they did not postpone or refrain from taking medication because of possible disclosure or discussion.

In the third pattern '*others do not know about HIV but another reason is given for taking medication',* respondents did everything they could to keep HIV concealed. They arranged their daily routine and circumstances in order to maintain nondisclosure. As by taking medication in sight of others they run the risk of unwanted disclosure, some of them chose to say it is another illness for which they were taking treatment. Respondents took pills openly at a fixed time and adherence was not endangered. Some respondents even kept their pills in clear sight.

In the last pattern, '*others do not know about HIV and respondents are determined not to disclose',* respondents needed to keep HIV a private matter. They always chose to keep HIV concealed and therefore social support was not an option. Two subgroups could be distinguished depending on whether the patient accepted HIV and the nondisclosure was based on rational arguments or not. The acceptors will be inventive in finding solutions to take their medication out of sight of others, as they were determined to be adherent. If secrecy was threatened, non-acceptors were tempted to skip a dose in order to prevent disclosure.

Experienced effect of disclosure

For many respondents, disclosure of HIV to most of their family and friends turned out better than expected. They anticipated negative reactions but did not get them. Disclosure relieved the emotional and practical stress of keeping an important secret. This seems to positively influence acceptance of HIV.

> *P: Yes, but as soon as I knew I told everyone and that really took a weight off my mind. It really did. I kept it bottled up for a month and then I went round and told everyone and immediately I felt happy that I had been able to tell everyone. Really, it's an immediate relief.*

However, for some respondents disclosure has led to broken relationships, isolation and anger. Some of them found the negative reactions of others understandable, based on how they themselves thought about HIV before being diagnosed. They often acquiesced in the breakup of relationships due to their HIV. Only some respondents remained angry or felt wronged by the negative reactions of others to their disclosure.

> *At the beginning I told a few friends, people I knew very well. They dropped me like a stone. I can't describe it any other way. Or people who know who dare not shake my hand any more, or turn around and walk away. That hurts, really hurts.*

Having disclosed one's HIV-status, regardless of the reactions, did not mean that discussion or mention of one's HIV is welcome, because it is important to live a normal life that is not dominated by HIV.

Experiencing negative consequences led to regretting having disclosed. Consequences may include losing one's partner, losing friends, losing one's job, not having control over the information or experiencing too much well-meant meddling. Some respondents even felt guilty towards others if the revelation of their HIV-status created a negative emotional reaction.

Many of the MSM interviewed experienced disclosure as a second coming-out, as the process of telling has similarities. For some of them their HIV-status confirmed their homosexuality. The experience of disclosure was coloured by how their coming out as gay was experienced, and feeling guilty for causing their parents to suffer again.

Experiences with disclosure influenced their future choices relating to disclosure. Respondents who had experienced negative consequences in the past did not intend to disclose in future situations such as a new job, new colleagues or other new contacts. Some acceptors who initially considered it necessary or natural to inform others, including people they knew less well such as co-workers, now more carefully evaluated doing so because of the consequences they have experienced.

Discussion

Because of the number and the depth of the interviews carried out for our study we were able to make use of 'thick' data. We have made use of a diverse sample. The diversity is proportionate to the number and depth of the interviews. Having a large amount of data on diverse situations, we were able to make full use of comparative analyses. The thickness of the data allowed us to compare and contrast and at the same time to make inferences about the diversity observed. Our study not only confirmed what had been found in previous studies, but also shed some light on the processes at play in disclosure. The results of this study are partially concordant with the phases of disclosure described by Holt et al.[21], whose data were collected before the introduction of HAART. Our study brought the relation between disclosure and acceptance of being HIV positive clearly to the fore, more than in previous studies.

Disclosure is a central theme for all HIV-infected patients. This study investigated in detail the process of disclosure and the relation of disclosure and nondisclosure to adherence to HAART. Disclosure behaviour is influenced by the phase of the disease and acceptance and non-acceptance of being HIV-positive. Our data show that a multitude of factors influence the process and the variation of underlying influences makes disclosure and nondisclosure a complex matter. Hence the problem of how to advise HIV-infected patients regarding disclosure is not easy to solve.

Though we found that most respondents think that, in principle, openness is to be preferred and nondisclosure can be experienced as a negative choice, disclosure is not always the best solution. Other needs are apparently considered: disclosure and nondisclosure are not always rational choices, but can be a reaction to an emotional need. Under such conditions rational arguments for disclosure will not be effective. In advising HIV-infected patients, health care professionals should be aware of the impact of disclosure and the stress it can generate. They should also be aware of the relation between acceptance of HIV and disclosure behaviour. Acceptance and non-acceptance of HIV and concomitant disclosure behaviour are not static and can change over time. Before deciding to disclose taking time to adjust to the idea of being HIV-infected and coming to terms with the disease is an advisable strategy. This adjustment time also helps prepare the patient to deal with the reactions of others.

In those respondents who chose to disclose another illness, we wonder if this difficult cover-up strategy was chosen so that they would be found out without actually having to talk about it, as these cover-ups are sometimes risky and can even point to HIV. Nothing in their story reveals that they desire disclosure, however, they are amazingly unconcerned about the “accidental” disclosure that their behaviour is likely to cause; this is incongruent with their determination not to disclose. They present themselves as unconcerned about the impact of their nondisclosure on their children if a child discovers the truth by accident or hears it from someone else. Using the afore-mentioned strategy they may want to prevent their HIV-status becoming a topic of discussion.

The knowledge that disclosure is beneficial for social support and adherence should be balanced against the stereotypes and possible consequences (stigma/

discrimination) of disclosure of HIV. People infected by HIV have to be prepared for the negative consequences of disclosure. If they do not disclose their HIV status, they need support to remain adherent. Patients need practical advice and inventive tricks to use in specific situations if nondisclosure is an obstacle to adherence. Using ‘ if then’ questions -*if this happens then what will you do*- can be helpful in anticipating situations in which nondisclosure may interfere with living a normal life or adherence behaviour[32-34]. As the actual telling seems an important threshold to disclosure, health care providers can prepare and help patients develop the skills to approach others.

Limitations. There is a wide range in the duration of the HIV infection in the sample (1-19 years). In interpreting our data we did not analyse the differences in the duration of being HIV-infected; the interviews delivered retrospective and prospective information, current and past behaviour. However, only those patients who were willing to talk about being HIV-positive could be included. Patients who cannot face the confrontation at all will not participate in qualitative studies such as this.

References

1. Hecht FM, Grant RM, Petropoulos CJ, Dillon B, Chesney MA, Tian H et al.: Sexual transmission of an HIV-1 variant resistant to multiple reverse-transcriptase and protease inhibitors. *N Engl J Med* 1998, 339: 307-11.
2. McNabb J, Ross JW, Abriola K, Turley C, Nightingale CH, Nicolau DP: Adherence to highly active antiretroviral therapy predicts virologic outcome at an inner-city human immunodeficiency virus clinic. *Clin Infect Dis* 2001, 33: 700-5.
3. Race E, Dam E, Obry V, Paulous S, Clavel F: Analysis of HIV cross-resistance to protease inhibitors using a rapid single-cycle recombinant virus assay for patients failing on combination therapies. *Aids* 1999, 13: 2061-8.
4. Ammassari A, Trotta MP, Murri R, Castelli F, Narciso P, Noto P et al.: Correlates and predictors of adherence to highly active antiretroviral therapy: overview of published literature. *J Acquir Immune Defic Syndr* 2002, 31 Suppl 3: 123-7.
5. Vervoort SC, Borleffs JC, Hoepelman AI, Grypdonck MH: Adherence in antiretroviral therapy: a review of qualitative studies. *AIDS* 2007, 21: 271-81.
6. Stutterheim SE, Bos AER, Schaalma HP. HIV-related Stigma in the Netherlands. 2008. Enschede, PrintPartners Ipsekamp.
7. Kalichman SC, DiMarco M, Austin J, Luke W, DiFonzo K: Stress, social support, and HIV-status disclosure to family and friends among HIV-positive men and women. *J Behav Med* 2003, 26: 315-32.
8. Petrak JA, Doyle AM, Smith A, Skinner C, Hedge B: Factors associated with self-disclosure of HIV serostatus to significant others. *Br J Health Psychol* 2001, 6: 69-79.
9. Serovich JM, Esbensen AJ, Mason TL: HIV disclosure by men who have sex with men to immediate family over time. *AIDS Patient Care STDS* 2005, 19: 506-17.
10. Serovich JM, Craft SM, Yoon HJ: Women's HIV disclosure to immediate family. *AIDS Patient Care STDS* 2007, 21: 970-80.
11. Serovich JM, McDowell TL, Grafsky EL: Women's report of regret of HIV disclosure to family, friends and sex partners. *AIDS Behav* 2008, 12: 227-31.
12. Serovich JM, Mason TL, Bautista D, Toviessi P: Gay men's report of regret of HIV disclosure to family, friends, and sex partners. *AIDS Educ Prev* 2006, 18: 132-8.
13. Ateka GK: HIV status disclosure and partner discordance: a public health dilemma. *Public Health* 2006, 120: 493-496.
14. Bairan A, Taylor GA, Blake BJ, Akers T, Sowell R, Mendiola R, Jr.: A model of HIV disclosure: disclosure and types of social relationships. *J Am Acad Nurse Pract* 2007, 19: 242-250.
15. Sowell RL, Seals BF, Phillips KD, Julious CH: Disclosure of HIV infection: how do women decide to tell? *Health Education Research* 2003, 18: 32-44.
16. Hays RB, McKusick L, Pollack L, Hilliard R, Hoff C, Coates TJ: Disclosing HIV seropositivity to significant others. *Aids* 1993, 7: 425-431.
17. Zea MC, Reisen CA, Poppen PJ, Echeverry JJ, Bianchi FT: Disclosure of HIV-positive status to Latino gay men's social networks. *Am J Community Psychol* 2004, 33: 107-116.
18. Levy A, Laska F, Abelhauser A, Delfraissy JF, Goujard C, Boue F et al.: Disclosure of HIV seropositivity. *Journal of Clinical Psychology* 1999, 55: 1041-1049.
19. Vance D: The relationship between HIV disclosure and adjustment. *Psychological Reports* 2006, 99: 659-663.

20. Korner H: Negotiating cultures: Disclosure of HIV-positive status among people from minority ethnic communities in Sydney. *Culture Health & Sexuality* 2007, 9: 137-152.
21. Holt R, Court P, Vedhara K, Nott KH, Holmes J, Snow MH: The role of disclosure in coping with HIV infection. *AIDS Care* 1998, 10: 49-60.
22. Klitzman RL, Kirshenbaum SB, Dodge B, Remien RH, Ehrhardt AA, Johnson MO et al.: Intricacies and inter-relationships between HIV disclosure and HAART: a qualitative study. *AIDS Care* 2004, 16: 628-40.
23. Pennebaker JW, Colder M, Sharp LK: Accelerating the Coping Process. *Journal of Personality and Social Psychology* 1990, 58: 528-537.
24. Burnard P: A method of analysing interview transcripts in qualitative research. *Nurse Education Today* 1991, 11: 461-466.
25. Morse JM, Hupcey JE, Mitcham C, Lenz ER: Concept analysis in nursing research: a critical appraisal. *Sch Inq Nurs Pract* 1996, 10: 253-77.
26. Charmaz K: *Constructing grounded theory : a practical guide through qualitative analysis*. London: SAGE Publications; 2006.
27. Glaser BG, Strauss AL: *The discovery of grounded theory, strategies for qualitative research*. Chicago: Aldine; 1967.
28. Gras L, Sighem AV, Smit C, Zaheri S, Schuitemaker H, Wolf F. Report 2008; Monitoring of Human Immunodeficiency Virus (HIV) Infection in the Netherlands. 2008.
29. Sasse A, Defray A, Buziarsist J, Beckhoven Dv, Wanyama S. Yearly report AIDS-HIV 2007 in Belgium Epidemiologie van AIDS en HIV in België, toestand december 2007. 2008. Brussel, Belgium.
30. Kuckartz U: *winMAX Scientific Text Analysis For the Social Science*. Berlin: BSS; 1998.
31. Vervoort SC, Grypdonck MH, Grauwe AD, Hoepelman AI, Borleffs JC: Adherence to HAART: processes explaining adherence behavior in acceptors and non-acceptors. *AIDS Care* 2009, 21, 431-438.
32. Gollwitzer PM, Brandstatter V: Implementation intentions and effective goal persuit. *Journal of Personality and Social Psychology* 1997, 73: 186-199.
33. Gollwitzer PM: Implementation intentions - Strong effects of simple plans. *American Pshycholgist* 1999, 54: 493-503.
34. Gollwitzer PM, Fujita K, Oettingen G: Planning and implementation of goals. In *Handbook of self regulations: Research, Theory and Application*. Edited by Vohs KD, Baumeister RF. New Uork: Guilford Press; 2004:211-228.

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Submitted

Chapter 5

The role of HIV nursing consultants in the care of HIV-infected patients in Dutch hospital outpatient clinics

Abstract

In the Netherlands HIV nursing consultants have participated in HIV-care since 1985; their profession has changed with developments in HIV treatment over time. The goal of this study was to gather information about the role of HIV nursing consultants in the care of HIV infected patients. Understanding how they perform provides a useful example to other (HIV-)care settings over the world.

Structured interviews were held with HIV nursing consultants from all 24 AIDS treatment centres between May 2006 and February 2007. Descriptive analyses were performed and statistical tests were used to detect differences between centres categorized according to the care model used (parallel, unstructured, alternating).

14 (58%) centres perform substitution of care/alternating care. HIV nursing consultants see almost all patients at least once a year; they see all patients when treatment is started or altered. The frequency of consultations for patients in stable condition varies from two to four times a year, performed by HIV nursing consultants and physicians. Substitution leads to a slight, non-significant decrease in number of consultations. Adherence support is provided at the start of and during treatment. Respondents try to resolve encountered difficulties with the patient to prevent non-adherence. Regular meetings to discuss patients are common. All nurses are acquainted with the treatment guidelines. Detailed knowledge of the adherence issues is limited: fourteen (58.3%) respondents had read the adherence chapter.

Substitution of care model is an appropriate and effective method for the management of HIV infected patients.

Further development of and research into this new role of HIV nurse consultants is appropriate.

Keywords: HIV, HIV nursing consultant, outpatient clinic, substitution of care

Introduction

The occurrence of the human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) was first observed in the Netherlands in the early 1980s. In 1990 twelve hospitals were designated as AIDS treatment centres for the treatment of HIV-infection, in accordance with the *Hospital Facilities Act* (Wet Ziekenhuisvoorzieningen). Since the introduction of highly active antiretroviral therapy (HAART) in 1996, mortality in HIV-infected patients has decreased enormously[1,2]. However, treatment of HIV-infection and management of the adverse side effects of HAART became more complex. Consequently, in 1998 the Health Council (Gezondheidsraad) of the Netherlands concluded that treatment of HIV-patients should fall under the S*pecial Medical Procedures Act* (Wet op Bijzondere Medische Verrichtingen) and expertise should be concentrated in AIDS treatment centres. Since January 2002 twenty-four AIDS treatment centres established in twenty-five hospitals and four paediatric AIDS treatment centres have been designated. Criteria formulated by the Health Council of the Netherlands (2001) specify that all AIDS treatment centres should guarantee the presence of HIV nursing consultants.

HIV nursing consultants are experienced nurses, specialised in the field of HIV care. Differences are seen in the education of the Dutch nursing consultants; centres employ nurses without post-graduate qualifications and nurses with a post-graduate qualification on a professional (nurse specialist/master of advance nursing practice) and/or academic level (master of science). Based on their education, different titles are used: Nursing Consultant, Nurse Practitioner and Nurse Specialist. In order to promote readability, all types will be referred to as 'HIV nursing consultant (HNC)'. Furthermore, in this article the term 'physician' is used for the internist specialised in infectious diseases as well as the senior resident who is in training to become an internist.

As HIV has become a more chronic disease, HIV-infected patients are now mainly cared for through the outpatient clinic. In this setting, HNCs can offer care to all Dutch HIV-infected patients. They have an important role in the care for people infected by HIV. Their profession consists of direct patient care, consultation, research and expert coaching/education. Central issues in the delivered HIV nursing care are related to the confrontation with having an incurable, infectious and stigmatized disease. HNCs provide support, counselling, advice and information according to patients' needs in somatic, psychological, social and behavioural areas. This includes care that is related to coping with the diagnosis, sexual health and dealing with disclosure and its possible consequences, such as stigmatization, isolation and emotions of others[3]. Since the introduction of HAART, adherence support has become a central issue in the care for HIV-infected patients. To attain the benefits of HAART, high levels of adherence are of utmost importance as low levels of adherence are highly associated with viral rebound, progression to AIDS[4] and death[5,6]. Poor adherence can lead to drug resistance[7]. HNCs support patients in being adherent before treatment is started and during treatment. They pay attention to factors influencing adherence such as busy life, side effects, secrecy, depression, social support and insight into the illness[3].

In order to optimise the care of HIV-infected patients the Dutch “Guideline on Antiretroviral Therapy” was formulated[8]. This guideline includes chapters that are considered important practical guides for HIV nursing consultants; a chapter concerning adherence-optimising measures and practical recommendations on taking HAART and a chapter giving advice on what to do after vomiting or forgetting medication.

Several studies were conducted on the topics of adherence[9,10], stigma[11] and sexual health[12] in the Dutch HIV population. The study here presented focuses on the role of the HNC in the care of HIV infected patients in The Netherlands.

A recent study in the Netherlands showed that HNCs play an important role in the care of HIV-infected patients. The quality of care delivered by the HNCs is considered good by the study participants[13]. However, the precise role of HNCs and their involvement in the Dutch HIV-outpatient clinics has not been investigated in detail.

Neither has the role of nurses in outpatient clinics in other Western countries been described extensively in the literature. There is considerable variety internationally. Standard care in a German study on HIV-infected patients’ preferences, regarding medical and psychosocial support, comprised consultations every two months with a physician. Nurse practitioners or specialised nurses played no part in that medical system[14].

According to Griffiths et al.[15] the role of nurse practitioners in HIV outpatient care is not clearly defined. In their study patients and providers considered nurse practitioners appropriate care providers for some patients, to manage their routine care, including blood monitoring and discussion of results. Nurse practitioners can also provide support with adherence and sexual, psychosocial and emotional health. Poppa et al.[16] consider a multidisciplinary approach to HIV-infected patients necessary. Another study recommends the use of a chronic disease management model in HIV outpatient care, with an extended role for nurse practitioners[17]. The recent British guideline mentions changes in the organisation of care in some outpatient care settings where nurse specialists provide routine monitoring for HIV-infected patients. This is considered good practice: patients seem to appreciate these new services and they may also lead to more efficient care and a decrease in costs[18].

The quality of care for HIV-infected patients provided by nurse practitioners, physician assistants and physicians appeared to be similar in a study in the United States of America. The measured criteria were based on American HIV guidelines. Details on the content of these consultations were not given[19].

Van Manen et al.[20] found no guidelines relating to multidisciplinary care for outpatient treatment of HIV-infected patients in their review of current HIV care. Roles of nurses in AIDS treatment centres in North America and Europe vary and show much overlap with other care providers, such as physicians and social workers.

The aim of the current study was to investigate the role of HNCs in the care of HIV-infected patients in Dutch outpatient clinics from the HNCs' perspective. The emphasis lies on substitution of (medical) care; details are also given on the organisation and the quality of care.

Method

A descriptive study was conducted to investigate the nursing care of HIV-infected patients. One HNC from each of the 24 AIDS treatment centres participated in the study. This consultant was selected based on experience in the care of HIV-infected patients; the most experienced nurse in a team was approached. The HNC was called by phone and was invited to participate. None refused participation. Agreement and participating in an interview was considered to be consent.

Data were collected through 14 face-to-face and 10 telephone structured interviews from May 2006 to February 2007. The interviews were conducted by two researchers, both working as HNCs and both studying for a higher (PhD and Master's) degree. The questions focussed on the treatment team, the patients in care, organisation of the outpatient clinic, standard care, frequency of patient consultations with physicians and HNCs, job satisfaction and on specific parts of the Dutch Guideline on Antiretroviral Treatment. After data collection, additional

queries were sent to all centres to complete the gathering of information. All questionnaires were returned, signifying a response rate of 100%.
The total number of patients for each AIDS treatment centre was obtained through the HIV Monitoring Foundation[21].

Statistical analysis of the quantitative data extracted from the interviews and the questionnaires was conducted using SPSS 15.0. Descriptive statistics were used to analyse staff and centre characteristics, care model and certain aspects of the application of the national guideline on antiretroviral therapy. The Mann-Whitney U-Test and Fisher's Exact Test were used to detect significant differences between types of treatment centres and centres with small or large populations. P-values of < 0.05 (two-tailed) were considered statistically significant.

AIDS treatment centres were categorized into several groups, looking at the care model (care provided on a parallel or an alternating basis), the number of patients treated and the academic status of the hospital. Hospitals that treat more than 400 patients were defined as 'large' hospitals, those with fewer than 400 patients as 'small' hospitals. The paediatric AIDS treatment centres (n=4) were not included in our study.

Results

Care model

In 10 centres (41.7%) health care in the outpatient clinic was provided by the HNC on a parallel or unstructured basis, meaning that patients see both the HNC and the physician, one after the other. In 14 centres (58.3%) health care was offered by the HNC as a substitution for care formerly provided by a physician. Consultations were carried out on an alternating basis, meaning that patients are seen in turns by either an HNC or a physician at three or four month intervals. Generally, this substitution of care was employed in a designated group of patients, such as patients in stable condition who may or may not be on HAART. These consultations with the HNCs consisted of a check of the patient's condition, discussion of the results of their blood tests and support with emotional, psychosocial, and sexual health and adherence. In case of deviating lab results or physical problems, the HNC did plan further care based on the institutional guidelines or in discussion with the physician.

Other patients were offered consultations on a parallel basis. One centre offered both parallel and substitute consultations, as only one of the nursing consultants had sufficient expertise to perform substitute consultations. The parallel consultations comprised aspects of care provided by nurses.

Staff and centre characteristics

Table 1 presents the major characteristics of the staff (HNCs and physicians) of the AIDS treatment centres. Centres providing the substitution concept employed a larger number of HNCs and a larger number of physicians in comparison to those utilizing the parallel concept. Substitution of care was provided in half of the academic, 77.8% of the large and 46.7% of the small hospitals.

Table 1 *Staff and centre characteristics*

			Organization of outpatient hospital care		
		Total	**Substitution of care**	**Parallel and unstructured consultations**	**P-value**
		n (%)	**n (%)**	**n (%)**	
		Mean (range per hospital)			
	Number of hospitals	24 (100%)	14 (58.3%)	10 (41.7%)	
	Number of HIV nursing consultants	61(100%)	40 (65.6%)	21 (34.4%)	
		2.5 (1-8)	2.9 (1-8)	2.1 (1-3)	
	Number of physicians	82 (100%)	50 (61.0%)	32 (39.%)	
		3.4 (1-10)	3.6 (1-10)	3.2 (1-6)	
	Number of patients[1]	11,509 (100%)	8,068 (70.0%)	3,441 (30.0%)	
		479.5 (76-1811)	576.3 (76-1811)	344.1 (176-635)	
Academic status	University	8 (100%)	4 (50.0%)	4 (50.0%)	0.673
	Non-university	16 (100%)	10 (62.5%)	6 (37.5%)	
Patient population size[2]	Large	9 (100%)	7 (77.8%)	2 (22.2%)	0.210
	Small	15 (100%)	7 (46.7%)	8 (53.3%)	

[1] *Based on numbers provided by the HIV Monitoring Foundation[21].*

[2] *Hospitals with ≥400 patients are defined as 'large' hospitals; those with <400 patients as 'small' hospitals. P-values were obtained from a Fisher's Exact Test.*

The number of patients in the centres varied from 76 to 1811[21]. The mean number of patients treated in centres that applied alternating care was 576.3 and in centres that applied parallel care 344.1.

Organization of care

Consultations with HNC

All HIV-infected patients had their own HNC. Nine respondents (37.5%) saw all patients at least once a year; fifteen respondents (62.5%) stated that they see the majority of the patients. All respondents saw all patients before the start of HAART or in case of switching treatment. Centre characteristics taken into account, no significant differences in the involvement of HNCs in patient care were found.

Accessibility of HNC

All HNCs strived for easy accessibility. They could be reached by phone during office hours with six (25%) having telephonic consulting hours, varying from half an hour to two hours per day. Eleven consultants (45.8%) could be reached by e-mail. In ten hospitals (41.7%) patients could walk in without having an appointment.

Frequency of consultation

The frequency of consultations of HIV infected patients at the outpatient clinic varied from one to four times a year (**Table 2**). Generally, patients taking HAART who are in stable condition visited the outpatient clinic slightly more often, though not significantly, than patients not receiving HAART. No significant differences were found in the frequency of consultations with an HNC or physician between care models.

Consultations with physicians in centres that applied the parallel concept showed a higher frequency than in those employing the substitution of care concept (stable patients not on HAART 2.8 versus 2.1 consultations and stable patients on HAART 3.2 versus 2.3 consultations); for the latter this difference was statistically significant (p=0.048).

All respondents plan extra nursing consultations if required by the patient's condition, observed adherence problems and/or problems related to being HIV infected. During the first 24 weeks after the initiation of HAART, the frequency of nursing consultations varied from three to eight (data not shown). Variation was

Table 2 *Consultations with HIV nursing consultants or physicians by model of care and HAART treatment status, per year*

		Organization of outpatient hospital care Mean[1] (range)			P-value
		Total	**Substitution of care**	**Parallel and unstructured consultations**	
Stable patient not on HAART	Consultations with HIV nursing consultant	2.4 (1.5-4)	2.3 (1.5-3.5)	2.5 (1.5-4)	0.585
	Consultations with physician	2.4 (1-4)	2.1 (1-4)	2.8 (1.5-4)	0.108
	Total		2.2	2.7	0.312
Stable patient on HAART	Consultations with HIV nursing consultant	2.7 (1-4)	2.5 (1-4)	3.0 (1.5-4)	0.235
	Consultations with physician	2.7 (1-4)	2.3 (1-4)	3.2 (2-4)	0.048
	Total		2.4	3.1	0.084

[1] *Data are presented as the mean number of consultations with an HIV nursing consultant and/or a physician. P-values were obtained from a Mann-Whitney U-Test.*

seen in the type of consultations during this period, namely parallel, substitution of care or both types of consultations and telephonic consultations. Telephonic consultations were carried out to detect potential adherence problems.

Job satisfaction and organisation of care

Out of 24 respondents, 22 (91.7%) were satisfied professionally. Sixteen of them (66.7%) however stated that some aspects of their job could be improved, like the organizational situation and opportunities for additional training and advancement. Only two respondents (8.3%) were not satisfied with their job, in both cases due to organisational circumstances.

Support with adherence

All HIV-infected patients who were about to start or switch antiretroviral treatment are referred to their HNCs. During the follow-up visits all respondents discussed adherence with the patient, how patients were managing their treatment regimen and any encountered problems with being adherent.

Quality of care

In order to guarantee continuity of care and to synchronize all activities around individual patients all centres had regular meetings with HNCs and physicians to discuss patients' conditions. In 22 centres (91.7%) these meetings were planned frequently, varying from weekly to every three months. In two centres (8.3%) these meetings were carried out on an informal basis.

Table 3 presents the results regarding the knowledge and application of the "Guideline on Antiretroviral Therapy". All respondents were acquainted with this guideline. With respect to the knowledge and application of the chapters addressing aspects of the HNC's profession, nineteen respondents (79.2%) were familiar with the chapter on adherence. Fourteen (58.3%) respondents had read this chapter; only five applied the substitution of care model.

Three items in the guideline that need to be addressed by the HNCs are the assessment of depression before the initiation of HAART, the introduction of devices to aid adherence and the presentation of information on taking medication under special conditions. In all centres the patient's history with regard to depression was taken by an HNC before starting HAART. Furthermore, the patient's present mental state was assessed for depression in all centres. In three centres (12.5%) a psychiatrist or psychologist was consulted.

Most respondents (95.8%) presented one or more adherence devices, such as a medication schedule, a pillbox or an alarm, to be used as reminders to take medication.

Finally, information regarding medication management after vomiting or after missing a dose was given routinely in 23 centres, either verbally, in written form, or both. One respondent (4.2%) did not provide patients with verbal information on this subject, but only presented written information at the patient's request.

Table 3 *Application of the Dutch guideline on antiretroviral therapy, addressing HIV nursing consultants' practice: the assessment of depression, the presentation of devices to support adherence and information on medication management.*

			Organization of outpatient hospital care	
		Total	**Substitution of care**	**Parallel and unstructured consultations**
Guideline		n (%)	n (%)	n (%)
Familiar with chapter "Adherence"	Yes	19 (79.2)	10 (41.7)	9 (37.5)
	No	5 (20.8)	4 (16.4)	1 (4.2)
Knowledge of chapter "Adherence"[1]	Yes	14 (58.3)	5 (20.8)	9 (37.5)
	No	9 (37.5)	8 (33.3)	1 (4.2)
Depression				
Assessment of depression in the past	Yes in medical history	24 (100)	14 (58.3)	10 (41.7)
	No	0 (0)	0 (0)	0 (0)
Assessment of depression at present	Yes, with psychiatrist/ psychologist	3 (12.5)	3 (12.5)	0 (0)
	Yes, own assessment	21 (87.5)	11 (45.8)	10 (41.7)
Devices				
Devices to support adherence	Pillbox	1 (4.2)	0 (0)	1 (4.2)
	Medication schedule	1 (4.2)	1 (4.2)	0 (0)
	Combination of devices	20 (83.3)	12 (50)	8 (33.3)
	Other	1 (4.2)	1 (4.2)	0 (0)
	None	1 (4.2)	0 (0)	1 (4.2)
Information				
Information on vomiting/ forgetting medication	Yes, verbal	5 (20.8)	3 (12.5)	2 (8.3)
	Yes, written	4 (16.7)	1 (4.2)	3(12.5)
	Yes, both	14 (58.3)	10 (41.6)	4 (16.7)
	No	1 (4.2)	0 (0)	1 (4.2)

[1] *Data on knowledge of the chapter "Adherence" are missing from one centre.*

Discussion and conclusion

Discussion

All 24 AIDS treatment centres in the Netherlands were approached for participation in the study. In every centre one of the HNCs cooperated. The questionnaire was returned by all consultants. The results of our study give good insight into the (organisation of) care of Dutch HIV-infected patients in the outpatient clinics. Interviewing all HNCs would have provided more data on the care of HIV-infected patients.

The results of this study have shown that HNCs play a large role in the care of HIV-infected patients in the Netherlands and that this care nowadays is offered more often on an alternating basis. This change is also referred to as substitution of care, which has resulted in a new division of responsibility between physicians and HNCs.

Studies that compared the substitution of care model to the traditional model showed equal outcomes of care. Wilson et al.[19] compared the quality of HIV care provided by nurse practitioners with that of physician assistants and physicians. They found that the care provided by nurse practitioners and physician assistants was similar to that of physician HIV specialists. When compared to physicians not specialised in HIV, nurse practitioners and physician assistants performed better. They concluded that nurse practitioners were able to provide high-quality care to HIV-infected persons through extensive experience with a focus on HIV, participation in a team and easy access to physicians. The study of Vrijhoef et al.[22] on diabetes care showed that equal outcomes were achieved with the nurse specialist model as compared to the traditional care model. One outcome measure (glycaemic control) even improved in the nurse specialist model.

The results on *staff and centre characteristics* showed a larger number of HNCs and physicians in the AIDS treatment centres applying substitution of care compared to centres applying the parallel concept. This may be because centres providing substitution of care cater to a larger number of HIV infected patients. Substitution can alleviate physicians' busy polyclinic schedules, which sometimes lead to long waiting lists. We did not inquire about the full-time-equivalent of all HNCs per hospital, but generally the majority work 32 hours a week.

The results on *support with adherence* show that Dutch HNCs play a central role in adherence support. In the division of roles between the nurses and physicians, HNCs have a stronger focus on adherence than physicians. As HNCs see all patients at the start of and when switching treatment and almost all patients at least once a year, attention to adherence is guaranteed for all patients. Since frequencies of consultations with HNCs are higher in the substitution of care model, more time can be spent on specific adherence support. The relevance of ongoing medical attention is of utmost importance before, at the start of, and during treatment as adherence is a dynamic phenomenon[23-25]. On *quality of care* aspects we found that all respondents knew of the Dutch guideline. However, the knowledge of its specific contents was somewhat limited with only 58.3% of the respondents having actually read the chapter on adherence. Based on these results, we conclude that more attention to the Dutch guideline, and specifically the parts addressing nursing care and related themes, is warranted. In a substitution of care model, guidelines may provide a legal framework for medical care performed by nursing consultants. All centres assess previous or current depression. In half of the centres patients diagnosed with depression are treated before starting HAART. Most respondents related questions on this subject to the use of efavirenz, for which (history of) depression forms a contraindication. The presence of depression may influence adherence[26-30]; therefore, treatment of depression is advised before starting HAART. Based on the results, more attention should be paid to depression as a factor associated with non-adherence. Since HNCs focus on psychological well-being more than physicians usually do, the assessment of depression before starting HAART may be considered an important aspect of the HNC's job.

The specialised education of nurses should be encouraged so that they may attain the knowledge and experience necessary to practice their profession as HNCs. Further research on substitution of care may be helpful in gaining insight into the division of roles and responsibilities between physicians and nurses. Also, possibilities to improve patient outcomes and reduce health care costs deserve further exploration. Moreover, care guidelines are an important means to improve quality of care and to provide a framework for substitution of care.

Conclusion

The study provides good insight into the organisation of care of Dutch HIV-infected patients in the outpatient clinics. The results of this study can be used as an example for the development of an HIV nurse specialist care model in other HIV care settings over the world. Besides HNCs being able to provide substitution

of care, they can play an important role in supporting HIV-patients in coping with HIV and its consequences. Based on their expertise and their relationship with the HIV-patients, nurse specialists can provide intensive adherence support.
The substitution of care model is judged an appropriate solution for the management of chronic diseases with many recurring checks and is increasingly seen in the care for patients suffering from many chronic diseases like rheumatoid arthritis and diabetes in the Netherlands[22]. Furthermore, the substitution of care model may lower health care costs, as care provided by nursing consultants is less expensive than care offered by physicians. Our study already showed a slight decrease in the number of consultations with a physician.

Recently in the Netherlands a regulatory framework was set for the title of Nurse Specialist, meaning that only a nurse specialist may perform certain tasks related to a specific domain in health care. This new professional structure furthers the realisation of task realignment and the concomitant independence of the nursing profession[31]. Due to this development and the plan to register HNCs, consultants nowadays more often obtain post-graduate degrees.

Practice implications

There is a need for further development of and research into this new role of HNCs. Studies of the cost-effectiveness and patient satisfaction with substitution of HIV care can make an important contribution to these developments.

Acknowledgements

The authors gratefully acknowledge the contribution of Cas Kruitwagen, statistician of the Centre for Biostatistics, University of Utrecht, Utrecht, of Andrea Gasten for correcting the English language, and of the HIV nursing consultants of the Dutch AIDS treatment centres for their co-operation.

References

1. Mocroft A, Ledergerber B, Katlama C, Kirk O, Reiss P, d'Arminio Monforte A et al.: Decline in the AIDS and death rates in the EuroSIDA study: an observational study. *Lancet* 2003, 362: 22-9.
2. Palella FJ, Jr., Delaney KM, Moorman AC, Loveless MO, Fuhrer J, Satten GA et al.: Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. *N Engl J Med* 1998, 338: 853-60.
3. Hoeksema K, Van der Merché IB, Langebeek N. Professional profile: Nurse specialist HIV/AIDS [Beroepsdeelprofiel: Verpleegkundig specialist HIV/AIDS]. 2004. Utrecht, AVVV.
4. Bangsberg DR, Perry S, Charlebois ED, Clark RA, Roberston M, Zolopa AR et al.: Non-adherence to highly active antiretroviral therapy predicts progression to AIDS. *Aids* 2001, 15: 1181-1183.
5. Lima VD, Geller J, Bangsberg DR, Patterson TL, Daniel M, Kerr T et al.: The effect of adherence on the association between depressive symptoms and mortality among HIV-infected individuals first initiating HAART. *Aids* 2007, 21: 1175-1183.
6. Hogg RS, Heath K, Bangsberg D, Yip B, Press N, O'Shaughnessy MV et al.: Intermittent use of triple-combination therapy is predictive of mortality at baseline and after 1 year of follow-up. *AIDS* 2002, 16: 1051-1058.
7. McNabb J, Ross JW, Abriola K, Turley C, Nightingale CH, Nicolau DP: Adherence to highly active antiretroviral therapy predicts virologic outcome at an inner-city human immunodeficiency virus clinic. *Clin Infect Dis* 2001, 33: 700-5.
8. Netherlands Association of Aids-Treating Physicians (NVAB) and the Dutch Institute for Healthcare Improvement (CBO). Revised guideline 'Antiretroviral treatment'. 2006. Utrecht.
9. de Bruin M, Hospers HJ, van den Borne HW, Kok G, Prins JM: Theory- and evidence-based intervention to improve adherence to antiretroviral therapy among HIV-infected patients in the Netherlands: a pilot study. *AIDS Patient Care STDS* 2005, 19: 384-394.
10. Vervoort SC, Grypdonck MH, Grauwe AD, Hoepelman AI, Borleffs JC: Adherence to HAART: processes explaining adherence behavior in acceptors and non-acceptors. *AIDS Care* 2009, 21, 431-438.
11. Stutterheim SE, Bos AER, Schaalma HP. HIV-related Stigma in the Netherlands. 2008. Enschede, PrintPartners Ipsekamp.
12. van Kesteren NM, Kok G, Hospers HJ, Schippers J, De WW: Systematic development of a self-help and motivational enhancement intervention to promote sexual health in HIV-positive men who have sex with men. *AIDS Patient Care STDS* 2006, 20: 858-875.
13. Hekkink CF, Wigersma L, Yzermans CJ, Bindels PJ: HIV nursing consultants: patients' preferences and experiences about the quality of care. *J Clin Nurs* 2005, 14: 327-333.
14. Albus C, Schmeisser N, Salzberger B, Fatkenheuer G: Preferences regarding medical and psychosocial support in HIV-infected patients. *Patient Educ Couns* 2005, 56: 16-20.
15. Griffiths C, Miles K, Penny N, George B, Stephenson J, Power R et al.: A formative evaluation of the potential role of nurse practitioners in a central London HIV outpatient clinic. *Aids Care-Psychological and Socio-Medical Aspects of Aids/Hiv* 2006, 18: 22-26.
16. Poppa A, Davidson O, Deutsch J, Godfrey D, Fisher M, Head S et al.: British HIV Association (BHIVA)/British Association for Sexual Health and HIV (BASHH) guidelines on provision of adherence support to individuals receiving antiretroviral therapy (2003). *HIV Med* 2004, 5 Suppl 2: 46-60.

17. Dave SS, Miles K, Griffiths C, Mercey DE, Edwards SG: Is it time to rethink the roles of health professionals in the HIV outpatient setting? *Sex Transm Infect* 2004, 80: 153-154.
18. BHIVA. Standards for HIV Clinical Care. 2007. British Infection Society (BIS) British HIV Association in partnership with The Royal College of Physicians London; British Association of Sexual Health and HIV and the British Infection Society.
19. Wilson IB, Landon BE, Hirschhorn LR, McInnes K, Ding L, Marsden PV et al.: Quality of HIV care provided by nurse practitioners, physician assistants, and physicians. *Annals of Internal Medicine* 2005, 143: 729-736.
20. Van Manen L, Laschinger SJ, Stevenson T, Fothergill-Bourbonnais F: The nature of multidisciplinary HIV care in the ambulatory setting: a synthesis of the literature. *J Assoc Nurses AIDS Care* 2005, 16: 49-57
21. HIV Monitoring Foundation. Annual report 2006. 2007. Amsterdam.
22. Vrijhoef HJ, Diederiks JP, Spreeuwenberg C, Wolffenbuttel BH: Substitution model with central role for nurse specialist is justified in the care for stable type 2 diabetic outpatients. *J Adv Nurs* 2001, 36: 546-555.
23. Gifford AL, Bormann JE, Shively MJ, Lee M, Capparelli EV, Richman DD et al.: Effects of group HIV patient education on adherence to antiretrovirals. A randomized controlled trial. Chicago.
24. Tuldra A, Fumaz CR, Ferrer MJ, Bayes R, Arno A, Balague M et al.: Prospective randomized two-arm controlled study to determine the efficacy of a specific intervention to improve long-term adherence to highly active antiretroviral therapy. *Journal of Acquired Immune Deficiency Syndromes* 2000, 25: 221-228.
25. Vervoort SC, Borleffs JC, Hoepelman AI, Grypdonck MH: Adherence in antiretroviral therapy: a review of qualitative studies. *Aids* 2007, 21: 271-81.
26. Adam BD, Maticka-Tyndale E, Cohen JJ: Adherence practices among people living with HIV. *AIDS Care* 2003, 15: 263-74.
27. Hill Z, Kendall C, Fernandez M: Patterns of adherence to antiretrovirals: why adherence has no simple measure. *AIDS Patient Care STDS* 2003, 17: 519-25.
28. Remien RH, Hirky AE, Johnson MO, Weinhardt LS, Whittier D, Le GM: Adherence to medication treatment: a qualitative study of facilitators and barriers among a diverse sample of HIV+ men and women in four US cities. *AIDS Behav* 2003, 7: 61-72.
29. Ryan GW, Wagner GJ: Pill taking ‘routinization’: a critical factor to understanding episodic medication adherence. *Aids Care-Psychological and Socio-Medical Aspects of Aids/Hiv* 2003, 15: 795-806.
30. Wood SA, Tobias C, McCree J: Medication adherence for HIV positive women caring for children: in their own words. *Aids Care-Psychological and Socio-Medical Aspects of Aids/Hiv* 2004, 16: 909-913.
31. Steering group VBOC. Verpleegkundige toekomst in goede banen. Meurs, P. and van Rooijen, A. P. N. 2006. Utrecht, Haasbeek.

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Submitted

Chapter 6

Strategies to promote adherence in HIV-infected patients in the Netherlands

Abstract

A descriptive qualitative study using individual and focus group interviews was carried out to explore the strategies Dutch HIV nurse consultants use to promote adherence to antiretrovirale therapy and the assumptions on which their strategies are based. Twenty-three individual and three focus group interviews using case descriptions as triggers were held with HIV-nurse specialists.

HIV nurse consultants use a multitude of strategies mainly based on their experience. They seldom refer to the literature. The HIV nurse consultants accord particular importance to their relationship with patients as an important basis for adherence support. They show compassion to their patients while supporting them in taking control of their lives with HIV.

The study identified adherence-promoting strategies used before beginning antiretroviral treatment and during follow-up and yielded useful ideas for the care of HIV-infected patients. The findings can be applied to the development and use of adherence-promoting strategies.

Keywords: adherence strategies, HIV-nurse specialists, focus group interviews, individual interviews

Introduction

Since the introduction of antiretroviral therapy (ART), HIV-related mortality has decreased enormously in prosperous countries: HIV has become a chronic illness[1]. To attain the benefits of ART, adherence to treatment is of utmost importance. Low adherence is highly associated with viral rebound, progression to AIDS[2] and death[3,4]. Poor adherence can lead to drug resistance[5]. The relation between viral resistance and adherence levels differs between drug classes. Lower levels of adherence lead to a higher prevalence of resistance to non-nucleoside transcriptase inhibitors and a decreasing risk of resistance for un-boosted protease inhibitors[5-7]. To achieve success with ART there is a strong need for effective adherence interventions. Many studies on the efficacy of adherence interventions have been published, but little is known about what is done in daily practice. This may be very informative in developing interventions[8].

Since adherence is important for treatment success, most research seeks to describe influencing factors and the effects of interventions, providing information to health care providers on how to optimize adherence to ART[9-16]. However, strategies for optimizing adherence used in daily practice have only been reported to a limited extent. The qualitative study of Gerbert et al. in 23 physicians, eight nurse practitioners and four physician assistants aimed to deepen understanding of the challenges encountered in HIV-care[17]. Their study described the factors that need to be considered before deciding to start ART (readiness, potential risks for health), pre-treatment strategies to enhance adherence (education, placebo trial medication runs, identification of cues as a reminder) and strategies employed once the patient is on treatment (education about combination therapy and the consequences of non-adherence, anticipation of problems that might interfere with adherence, approaches to identify problems, discussion of the medication regimen, instruction to the patient as to what to do if problems arise, encouraging patients to adhere, referral to programs to educate patients or treatment of adherence-impeding conditions). Providers showed variation in the frequency and thoroughness of adherence assessment: some assessed adherence during every visit, others only if they expected non-adherence. The study showed that reliable information about adherence behaviour could be obtained if the healthcare provider had a non-judgmental attitude.

In the Netherlands there is a rich tradition of nursing care for HIV-infected patients. At present, 25 hospitals are designated as AIDS treatment centres for the 13.264 HIV-infected patients[18]. Physicians and HIV nurse consultants (HNCs) work together in order to offer treatment and support to all Dutch HIV-infected patients. All patients have their own physician and HNC. In nursing care for HIV-infected patients adherence is a central theme.

This study was conducted to explore the strategies HNCs use to promote adherence to ART and the nurses' rationale behind these strategies. Information about current practice can clarify the gap between evidence and practice and supplement evidence with experience-based knowledge.

Method

Study Design

The study is a descriptive qualitative study using two methods of data collection, individual interviews and focus group interviews, in order to explore HNC adherence-supporting practice. The two methods of data collection were chosen because of their complementary nature.

Sample

One HNC from each of 23 of the 24 AIDS treatment centres participated in the interview survey. The centre where the researchers work was not included. Ten men and 13 women participated, aged between 28 and 57. Seven of the participating HNCs had a master's degree. In each of the focus groups 5-7 HNCs participated from 13 of the 24 AIDS-treatment centres. Nine of them also participated in the individual interviews. Five men and 14 women participated in the focus groups. One of them had a master's degree. They were between 35 and 58 years of age. All HNCs in the study are Dutch Caucasians. The years of experience as HNC vary between one and 21 years. Focus group interviews were discontinued when the third focus group interview did not provide additional or new information.

Procedure

One respondent from each HIV-treatment centre was selected for the individual interviews, based on his/her experience in the care of HIV-infected patients: the most experienced nurse of the team was approached. The HNC was invited by phone. None of them refused participation.

Initially the same HNCs were selected for participation in the focus group

interviews. However, for pragmatic reasons (the planning of the group interviews) other HNC's were invited in order to increase participation. All participants were recruited by the researchers. The 19 HNC were a selection from the at present 71 HINS's, representing 13 of the 24 HIV-treatment centres.
For the focus groups HNCs were recruited either by phone or by e-mail. All HNCs were informed about the purpose, methodology and anonymity of the study, in written and in verbal form. Selected HNCs were verbally asked whether they wanted to participate. Agreement and participation in the study was considered as consent. Anonymity of the respondents was guaranteed and all material was handled anonymously. The study met the prevailing rules of approval of the University Medical Centre Utrecht.

Data collection

In the individual interviews data were collected during 13 face-to-face and 10 telephone interviews using a semi-structured interview guide (**Table 1**). The use of open-ended questions allowed HNCs to discuss their practice as well as their opinions about the topics discussed, while a reasonably strong structure was maintained as to what was discussed. The interviews were held from May 2006 to February 2007 and were conducted by two researchers, both working as HNCs and both studying for a higher (PhD and Master's) degree. The interviews took 45–95 minutes and focused on the specific care they provided, with an emphasis on strategies concerning adherence. The face-to-face interviews were held at the office of the participating HNC. During the telephone interviews all HNCs, were at their office, except one who was at home. The telephone interviews were held for practical reasons (distance, time constraints of the interviewee).

Table 1 *Guideline face-to-face interviews*

The role of the HNS at the start of ART
Topics before starting and at the start of ART
Number of consultations planned before the patient starts ART
Follow-up and support of patients after starting ART
Nursing topics when a patient is being treated with ART
Assessment of problematic situations for non-adherence/ forgetting
Influencing factors of adherence: complexity of the regimen, side effects, HIV-related symptoms, distress, negative life-experiences, disclosure, moods, social-support, use of practical aids

The focus group interviews took place between May and December 2007 and lasted 120 minutes each. They were led by a panel chairman assisted by an observer, both experienced in group interviewing. In the focus group interviews, patient cases were used as a trigger for discussion. Patient cases regarding problems in adherence were presented to the HNCs. The cases were based on patients form the researcher's case load, made unrecognizable by changing some patient characteristics. They presented a client that the HNCs might meet in their practice, in need of adherence support. Different adherence themes were represented in cases ('coping with the disease', 'preparation phase for the start with ART', 'regularly non-adherent and being treated with the last options, the quality of life defines adherence'). HNCs were asked to discuss how they would proceed in these cases. The panel-chairman asked clarifying and probing questions and used a guide to put adherence themes forward if not discussed by the panel (**Table 2**). Four cases were discussed. Per focus group interview there was time for three cases.

Table 2 *Guideline focus group interviews*

Therapy-related

Medication regimen:

- *fitting treatment and treatment time into patients' daily lives*
- *checking patients' adherence*
- *discussing problematic situations with regard to adherence and the strategies that can be used*
- *making a patient aware of his/her ambivalent feelings about ART*

Side effects:

- *giving information about (possible) side effects (how much information?) before starting ART*
- *having patients report side effects*
- *discussing the patients' quality of life*

Condition-related

Acceptance:

- *determining at what point the patient is in the process of acceptance of the HIV-diagnosis*
- *coping with HIV takes time; support with the coping process*
- *helping the patient not to get stuck and promoting acceptance*
- *relating of (non-)acceptance of HIV and starting ART*

Disclosure:

- *barriers for disclosure*
- *stimulating openness/disclosure to people around the patient*
- *discovering the advantages of disclosure versus those of nondisclosure*

Patient-related

Knowledge:

- *determining whether the patient understands the information given about HIV and its treatment*
- *Assessing a possible knowledge deficit*
- *giving a patient starting ART information based on lab results, without having HIV-related symptoms*

Motivation:

- *evaluating patients' motivation for taking ART (adherently)*
- *involving the patient at the start of ART*
- *checking patients' readiness to start ART*
- *preparing the patient to be ready to start ART*

Forgetting:

- *determining routine deviations*
- *analyzing situations in which patients forget their medication*
- *choosing practical aids for adherence support and the reasons for using these in specific circumstances*

Health care provider and health care system-related

- *building a relationship with the patient and determining the importance of this relationship for adherence to ART*

Socio-economic

Social support:

- *Getting a picture of a patient's social support structure*
- *Stimulating the patient to mobilize people around him/her to offer social support in adherence*

Data analysis

All individual interviews and focus group interviews were audio-taped and literally transcribed. One interview was not audio taped because the device did not work. The notes taken during the interview were used. The texts were entered in the software program WINMAX-PRO[19] for analysis of qualitative data.

We first analyzed the focus group interviews because these data had more depth than those of the individual interviews which covered more topics. The texts were read out in full first to acquire an overall picture of the discussion and were reread several times to grasp the details. The text was coded line-by-line and paragraph by paragraph extracting the themes and the content within these themes that were discussed. Colour coding was used to identify the contributions of individual HNCs in order to follow their train of thought and the code-tree was developed. Proposed strategies to promote adherence were identified as well as the underlying considerations and rationale for the strategies, both those explicated by the HNCs and those clearly derivable from what they said in the focus interviews.

Units coded with the same codes were analysed together to make valid interpretations. Interpretations were made in the context of the other contributions of the HNCs, as well as in the context of the interactions between HNCs. Concepts were described and categorized according to their commonalities. Categories developed were checked in a constant comparative analysis. Four researchers were involved in this process, providing researcher triangulation. They discussed the analysis until there was agreement, continuously checking the interpretation with the other data. The analysis of the first focus group provided input for the second and the analysis of the second for the third.

The analysis of the individual interviews was guided by the results of the focus groups and focused on similarities and differences in comparison with the focus group findings. The analysis was validated during the whole process by researcher triangulation and the use of memos. The memos reported tentative ideas and thoughts during the analysis process.

Findings

The strategies used by the HNCs to promote patients' adherence behaviour are categorized under the core strategies (italics) and reported according to the main categories of factors related to adherence as often used in adherence literature: therapy-related factors, condition-related factors, patient-related factors, healthcare team and system-related factors and socioeconomic factors (bold)[13,20]. A summary is given in **Table 3**.

Strategies addressing therapy-related factors

Preparing the patient for ART. The HNCs give patients sufficient time to prepare for ART, as they believe that patients having time to get accustomed to the idea of a life with medication influences adherence positively in the longer term. Early in their relationship with the patient they discuss the impact of starting treatment and how treatment would fit into their life. If necessary, HNCs discuss possible misconceptions about the treatment. They start preparing the patient for ART when the CD4 count decreases towards the level that requires treatment (currently < 350/mm^3 in the Netherlands). HNCs consider it a risk factor for non-adherence when a patient has to start medication soon after hearing the diagnosis.

Adjusting to the demands of ART. HNCs consider it important that the choice of the regimen be adapted to the patient's lifestyle and that the moment of medication intake fits into the patient's daily life. Most HNCs involve the patient in the selection of the specific medication. When the physician has prescribed a regimen that according to the HNCs does not fit the patient's lifestyle they discuss this with the physician and propose another regimen.

HNCs stimulate patients to think about the best moment to take treatment (adherently). Between consultations, before ART is started, they allow patients time to discover the best moment to take the medication adherently and advise patients to chose a time that will fit in both weekday and weekend habits. They recommend to patients a moment that decreases the risk of unwanted disclosure (e.g., not having to take medication at work).

HNCs prepare medication schedules (including times and pill stickers) that show when which pills have to be taken. Patients are given tips and tricks. Some HNCs advise practicing with sweets or vitamins in order to find out whether the chosen moment works well and to experience what it is like to take treatment adherently. With these trial runs, they try to detect possible barriers. Schedules are adapted accordingly before the actual treatment starts.

HNCs want their patients to decide when they actually will start ART in order for patients to get used to the situation and create time to talk about it with others. The HNCs expect that taking time for the decision will influence adherence positively.

After the start of ART, HNCs discuss patients' medication intake and adherence at each consultation. They ask whether taking pills is troublesome and whether adherence problems have arisen. Most of them ask patients to describe their medication schedule in detail (which pills, how many and at what times), in order to identify adherence problems. Many of the HNCs use a sample pill box and ask patients to point out the pills they take. HNCs think that patients often overestimate their level of adherence. Some of the HNCs think that when adherence is not a problem during the first period of taking ART, there will be no problems in the longer term and when problems occur at the start that there is a greater chance that adherence will remain problematic. Some of the HNCs, however, expect that being adherent in the longer term can be difficult for some patients due to changes in their life situation, such as the occurrence of psychological problems.

In some treatment centres, plasma levels are checked in order to detect non-adherence. One HNC confronts the patient when the plasma level is too low, explaining that this is a consequence of non-adherence.

When non-adherence is evident, HNCs try to find the cause and discuss possible solutions to the problems. When they conclude that the current regimen forms too great a risk for non-adherence, HNCs discuss with the patient and the physician the possibility of changing the medication to a simpler regimen, as they think simplification will facilitate adherence. When the moment chosen to take medication no longer fits into the patient's lifestyle, the moment is changed accordingly.

HNCs discuss patients' non-adherent behaviour and try to find out whether a patient is motivated to change this behaviour. Some HNCs interpret the needs of a patient and predict behaviours based on the patient's response to this discussion and on their observations. If they find it necessary, HNCs confront patients with the consequences of their behaviour. Others are more reluctant to make a 'psychological' interpretation of their observations.

Some HNCs advise a drug-holiday when patients continue to be non-adherent. They believe that stopping treatment for a while will facilitate adherence when medication is restarted, especially if one waits until HIV-related symptoms occur.

Managing side effects. All HNCs prepare patients for possible unpleasant side effects before ART is started, because they consider that side effects can lead to non-adherence. Especially if patients start ART in the asymptomatic phase HNCs find that discussing side effects is necessary. HNCs advise patients to start treatment on non-workdays to be able to deal with possible side effects more easily. Patients are also prepared for the possible reactions of others to side effects, as these reactions can threaten secrecy and therefore can lead to non-adherence. Some HNCs inform patients about the strange sensations medication can arouse and explain that this means the medication is working. Patients are told they should not worry too much about side effects. HNCs say they carefully weigh the amount of information they provide, because they fear that if too much attention to side effects is given, patients would overly focus on the negative aspects of treatment. Opinions differ between the HNCs as to how much to reveal about side effects.

During treatment the HNCs check whether side effects are occurring. If so, they carefully explore with the patient whether side effects are impeding adherence and/or influencing quality of life. Subsequently HNCs consider whether the medication needs to be changed to a treatment not likely to give the same side effects and discuss this with the physician. Some of them consider a therapy break when they suspect non-adherence due to side effects. When the (possible) development of lipodystrophy/atrophy impedes adherence cosmetic treatment is advised.

Strategies addressing condition-related factors

Diminishing psychological distress. HNCs offer support or refer patients to another professional (psychologists/social worker) when the patient experiences distress. They consider distress related to non-acceptance and relational or financial problems risk factors for non-adherence. They refer the patient to another professional when they consider the task at hand to go beyond their competency or when they seem unable to induce progress in the patient's situation. From the data there seems to be some ambivalence about referring patients to another professional. They want to remain involved with the patient, but experience their expertise as insufficient. Indications for referral to another professional and clear criteria were not given.

Dealing with ambivalence. HNCs discuss with the patient whether ambivalence towards medication is an issue. They acknowledge the patient's feelings and carefully confront patients with their observations, and say they avoid upsetting the patient. They consider facing slumbering feelings to be a precondition for taking stock and making appropriate choices for the future. When a patient gets to the point that treatment is experienced as harmful instead of beneficial, HNCs discuss the patient's motivation to continue medication. They explore with the patient his/her quality of life and the role of the treatment. One of the HNC's usually draws a scale and discusses the patient's ability to bear the burden of treatment and the possibilities for renewed balance.

Assessing patients' acceptance of HIV. HNCs explore whether the patient accepts the diagnosis, as they are convinced that non-acceptance is a risk factor for non-adherence. They take into account that having to start treatment can form a renewed confrontation with being HIV-positive and that it requires effort to accept the illness again.

If acceptance is not reached before the start with ART, HNCs report different strategies. Some delay the start of ART, propose to start Cotrimoxazol prophylaxis and thus create time for learning to accept the diagnosis before ART is started. Doing that, they set a time limit within which the treatment should be started. That waiting too long is a risk factor, as known from the literature, is brought into the discussion. Other HNCs advise starting treatment and simultaneously address non-acceptance. In both circumstances they will address acceptance during follow-up consultations. One HNC discusses with patients that acceptance of HIV cannot be achieved from one moment to the next and offers patients the choice of delaying treatment for a while.

During treatment HNCs try to discover whether non-adherence is the result of acceptance problems. They say that if there is an acceptance problem, patients are not open to suggestions related to non-adherence. Neither specific topics nor specific strategies to promote acceptance were discussed during the (focus group) interviews. Some HNCs said they advise a therapy break if non-acceptance is leading to non-adherence; creating time to deal with the diagnosis may lead to greater acceptance.

Ascertaining (the role of) disclosure. HNCs say they discuss disclosure of HIV in an early stage because nondisclosure tends to impede adherence and can lead to social isolation and loneliness. They argue that in patients with a specific cultural background (e.g., Ghanaian/Surinamese) privacy is an even greater issue.

HNCs in the focus groups consider that disclosure should be stimulated because patients who disclose (to direct relations) are more likely to be adherent. They are convinced that nondisclosure may lead to situations that make medication intake difficult; when it is not possible to take medication secretly, a dose is easily postponed, skipped or forgotten, and that openness facilitates support in reminding patients to take the medication. Some of the HNCs tell patients that they need to break through the stigma for themselves before they can decide how to deal with disclosure.

In discussing disclosure with the patients, HNCs explore who is informed, who is not and what possible barriers for disclosure are (fear of stigmatization and rejection and past experiences). They try to identify whether there is a possibility of informing the partner, immediate family and others close to the patient. They think that patients themselves are in the best position to judge the ideas of people around them and evaluate the danger of stigmatization. Some HNCs sum up the advantages and disadvantages of disclosure and nondisclosure and make up the balance together with the patient. The final choice is left with the patient. One HNC advises patients not to link disclosure to starting treatment; as starting ART is stressful enough. Tips and tricks are given to remain adherent while preventing unwanted disclosure.

HNCs discuss with the patient nondisclosure as a possible barrier to adherence during treatment. When nondisclosure is considered the main reason for non-adherence, HNCs see disclosure as the solution. In the focus groups the risk of rejection after disclosure was not discussed. Data from the individual interviews clarify that HNC's, when advising disclosure, also discuss the risks.

Strategies addressing patient-related factors

Providing insight into the effect of treatment to create/enhance trust in medication. HNCs clarify that during treatment, patients are given their lab results either by the physician or the HNC. They believe that showing the effect of ART is helpful in promoting adherence. Some HNCs however, express ambivalence about giving feedback about the viral load and increasing CD4-count: on the one hand, lab results can motivate patients to take treatment adherently; on the other hand, the lab results do not always correspond with the patient's condition. They explain that patients set great store by lab results, especially the CD4-count. When the CD4-count is around 200 and does not increase, the HNCs find it difficult to motivate the patient to continue treatment.

Passing on knowledge. To prepare patients for ART, HNCs provide information about the treatment. HNCs say that patients can only take a well-informed decision to start treatment when they are told about the consequences and the risks. HNCs judge that if patients do not understand the principles of ART the risk of non-adherence increases. Before HNCs inform patients they try to find out what patients do and don't know about their disease and its treatment. How HNCs actually identify a knowledge deficit was not discussed. HNCs try to fill in any knowledge gaps and tailor the information to the specific patient. Some use drawings and graphs and simplify the information if necessary. The amount of information is adapted to what a patient can (or is thought to be able to) assimilate. If necessary, they plan extra consultations. The information HNCs give is about the effect of HIV on the body and they explain that low levels of CD4 cells can lead to illness. They always discuss the goal of the treatment, how the medication works and explain to patients the importance of adherence with regard to plasma levels and the risk of resistance. In some treatment centres the HNC offers a video on these topics. They also provide information about the prescribed medication. HNCs check whether the information they provided is clear by asking the patient to repeat the information in his/her own words.

HNCs try to detect misconceptions during treatment about adherence as well as deviations from the regimen. They give information about adherence and the consequences of non-adherence repeatedly. In particular, they emphasize to patients that resistance can develop and due to the way it develops, that viral load does not increase immediately after taking the medication non-adherently.

Assessing patients' motivation to start ART. HNCs consider it necessary to make patients think about their motivation to start treatment because they consider motivation to begin treatment to be an important predictor of taking medication adherently. According to them, this motivation is promoted by involving patients actively in the decision to start treatment. How they assess a patient's motivation or readiness was however not discussed.

HNCs discuss patients' motivation to take treatment (adherently) during treatment. Motivational interviewing is a method some of them use in discussing patient's motivation. Some of the HNCs discuss that if the motivation to continue to take medication is very low, they advise stopping medication and waiting until a patient gets ill to start a new combination of medication. Other HNCs sometimes propose stopping treatment for a while to restart with fresh courage after solving the problems that caused the lack of motivation. Some however, consider this too dangerous as it may lead to a therapy break. In their opinion, if dislike of the medication is the problem, motivation will not increase by temporarily stopping treatment.

Assessing patient's self-efficacy. Some HNCs assess patients' self-efficacy to take medication adherently. They discuss the patient's ability to take treatment adherently. In case of a low self-efficacy score the start of treatment is postponed, if medically possible. Details on strategies to increase self-efficacy were not mentioned.

Prevention of forgetting the medication. HNCs prepare the patient not to forget the medication and advise them to use a reminder such as a watch with an alarm or a mobile phone alarm/SMS-service. They warn patients about situations that will disrupt their routine and advise them to make sure to have pills with them in their handbag or car. They advise pill-boxes or medication-blisters. Some of the HNCs are convinced that the use of practical aids to increase adherence does not solve the problem of non-adherence, as the patient needs to remember to keep their watch, alarm or cell phone on and with them. If patients lack motivation or organizational skills, medication will still be forgotten. The problem is only transferred.

HNCs discuss forgetting during all consultations after starting ART and try to find out under what circumstances medication is forgotten, analyze possible reasons and propose solutions. Routine is seen as a possible cause of forgetting because taking medication happens thoughtlessly and therefore is difficult to remember afterwards. They discuss whether deviations from daily routine have led to non-adherence. In the first instance strategies are focused on short term solutions such as practical aids (reminders/pill-boxes etc). When adherence is threatened by special circumstances, one HNC advises patients to take a dose a bit earlier to avoid long delays or forgetting.

Checking moods. HNCs check depression when medication is started because depression in the patient's history is an exclusion criterion for starting with one of the agents (Efavirenz). Interventions related to moods as a possible influencing factor for non-adherence were not discussed in the (focus) interviews.

Strategies addressing healthcare team and system-related factors

Building a relationship with the patient. The data make clear that HNCs invest in building a trusting relationship with the patient. They consider the quality of the relationship and openness on the part of the patient essential. Empathy, sympathy and acknowledgement of a patient's situation were also noticed. HNCs consider it important to optimize the relationship with the patient by showing solidarity, respect and treating patients as equals. They invest in building a relationship in which patients dare to discuss their feelings and problems and try to avoid any hint of control. They strive for committed communication with their patients so that the patient feels free to open up without fearing consequences. HNCs plan consultations on a regular basis and want to be easily accessible for their patients.

Discussing (non-)adherent behaviour. HNCs ask in-depth questions to uncover underlying reasons for specific behaviour. They explain that their aim is for patients to be honest about their (adherence) behaviour, and not to give ’desirable’ answers. HNCs praise patients who are adherent. They say they hope this supports them to maintain adherence. In case of (persisting) non-adherence some HNCs will repeatedly warn the patient about its consequences. HNCs explain that sometimes patients reveal that they feel guilty or frustrated about being non-adherent and they use the patients feelings to support improving adherence.

Planning consultations according to the patient’s needs. HNCs plan additional consultations when they think it necessary in order to make progress. If a patient is not ready to start therapy, HNCs follow the CD4-cell count and talk with the patient about treatment in order to achieve readiness. If HNCs expect difficulties related to adherence, they intensify contact. However, some HNCs feel they should not ‘push the patient’. The experience of the first period of taking HAART is considered important for the future; many HNCs make a telephone call with the patient within one week after starting HAART and usually see them in their clinic two weeks after starting.

Thinking about roles and responsibilities as a professional. HNCs see their role as a supporter of patients, not as their decision-maker. They want to leave the responsibility for management of his/her disease and treatment (adherence) with the patient. They explain that the patient is in charge and makes his/her own choices. HNCs check patients’ choices related to medication intake to find out whether a patient can take responsibility and help patients to make their own decision. HNCs clarify that they find it frustrating when after leaving the responsibility with the patient, the patient behaves differently from what the HNCs expected or what had been agreed on. If this is the case, the HNC will discuss the risks involved in the patient’s behaviour. One HNC stops treatment in case of continuing non-adherence, which has resulted in treatment failure. In this case, the choice is not left to the patient.

Giving professional support at home. A few of the HNCs sometimes visit patients at home when they expect problems that can influence adherence, to get a picture of the patient’s circumstances. They support the patient at home and give advice on how to change certain circumstances.

Strategies addressing socio-economic factors

Reducing the risks related to low economic status and homelessness. HNCs explain that patients who are homeless have difficulties in being adherent and that in undocumented illegals, whose priority lies with survival, being adherent is far from evident. HNCs offer these patients intensive support and construct a regimen as compatible as possible with the patient's life.

Arranging social support. HNCs say they discuss with the patients their social relations and assess the quality of these relations as they consider social relations to facilitate adherence. They ask patients about people in their environment who could be supportive.

HNCs try to find out during treatment whether or not a partner is being supportive. They say they pay special attention to the influence of the partner on adherence, as this relation can either impede or facilitate adherence. Some of them stimulate exchanging experiences with other HIV-patients as this can be helpful in motivating patients to continue taking treatment adherently. Others are more reserved as they think they cannot influence the process. In their opinion patients prefer anonymous contacts.

Discussion

The combination of two data collection methods, individual and focus group interviews, yielded rich data about the strategies HNCs use in an advanced country. We have been able to give a detailed overview of adherence-promoting strategies. The individual interviews gave good insight in each of the HNCs working methods with regard to adherence. The presentation of cases as triggers for the focus-group interviews proved to be a fruitful technique and brought to light the underlying trains of thoughts. The HNCs soon began a discussion, offering examples from their own practice related to the case presented. The themes came up repeatedly for discussion. The validity of the data benefitted from the spontaneous interactions between the HNCs. The chairperson let the discussion develop when this was considered beneficial, and asked for clarification or depth when this was desirable. In the focus groups HNCs often agreed with each other; any thoughts differing from the mainstream were carefully presented. In the individual interviews a greater number of aspects of caring for patients with HIV were mentioned. The adherence strategies discussed in the focus groups were

Table 3 *Strategies used for promoting adherence as found during the interviews and the focus groups*

	Strategies addressing therapy-related factors	
CORE STRATEGIES	BEFORE START WITH HAART	DURING TREATMENT
Preparing the patient for HAART	Taking time to prepare for HAART	
Adjusting to the demands of HAART	Involving the patient in the selection of the specific antiretroviral medication	Discussing patients' medication intake and adherence
	Letting patients think about the best moment to take treatment (adherently).	Discussing solutions to problems
	Making medication schedules	Changing the medication to a simpler regimen
	Advising practicing with sweets or vitamins	Changing the moment medication is taken
	Letting patients decide on when they will start HAART	Discussing patient's non-adherence behaviour
		Discussing whether the patient is motivated to change his/her behaviour
		Advising a drug holiday
Managing side effects	Preparing patients for possible unpleasant side effects	Checking whether side effects are occurring
	Starting treatment on non-workdays	Changing to medication not producing the same side effects
		Advising a therapy break
	Strategies addressing condition-related factors	
Diminish psychological distress	Offering support of HNS or refer patients to another professional	Offering support of HNS or refer patients to another professional

Table 3 *Continued*

CORE STRATEGIES	BEFORE START WITH HAART	DURING TREATMENT
Dealing with ambivalence	Discussing with the patient whether ambivalence towards medication plays a role.	Discussing with the patient whether ambivalence towards medication plays a role.
Assessing patients acceptance of HIV	Exploring whether the patient accepts the diagnosis	Discovering whether acceptance problems are the reason for non-adherence
	Delaying the start of HAART when acceptance is insufficient	Creating a therapy break in case of non-acceptance
	Advising starting treatment and simultaneously addressing non-acceptance	
Ascertaining (the role of) disclosure	Discussing disclosure of HIV	Discussing non-disclosure as a possible barrier to adherence
	Exploring who is informed and who is not	
	Giving tips and tricks to prevent unwanted disclosure	Giving tips and tricks to prevent unwanted disclosure
	Strategies addressing patient-related factors	
Providing insight into the effect of treatment to create/ enhance trust in the medication	Explaining the lab results	
Passing on knowledge	Providing information about the treatment	Multiple discussions of adherence and the consequences of non-adherence
	Tailoring the information to the specific patient	
	Checking whether the information provided is clear	

Table 3 *Continued*

CORE STRATEGIES	BEFORE START WITH HAART	DURING TREATMENT
Assessing patients’ motivation to start HAART	Making patients think about their motivation,	Discussing the patient’s to motivation take treatment (adherently). Motivational Interviewing
Assessing patients’ self-efficacy	Assessing patients’ self-efficacy to take medication adherently.	
Preventing forgetting the medication	Preparing the patient not to forget	Discussing forgetting during treatment
	Advising the use of practical aids to increase adherence	
Checking moods	Checking moods not directly related to being HIV-positive	Checking moods not directly related to being HIV-positive
Strategies addressing healthcare team and system-related factors		
Building a relationship with the patient	Building a trusting relationship with the patient	Building a trusting relationship with the patient
	Empathy, sympathy and acknowledgement of a patient’s’ situation	Empathy, sympathy and acknowledgement of a patient’s situation
Discussing (non)adherence behaviour		Asking in-depth questions
		Reinforcing good behaviour by praise
		Confronting patients with observed discrepancies in their behaviour

Table 3 *Continued*

CORE STRATEGIES	BEFORE START WITH HAART	DURING TREATMENT
Planning consultations according to patients' needs	Intensive contact is arranged	Intensive contact is arranged
Thinking about roles and responsibilities as a professional	Supporting patients, not taking decisions for them	Intensive contact is arranged
	Leaving the responsibility with the patient	Leaving the responsibility with the patient
Giving professional support at home	Visiting patients at home	Visiting patients at home
	Strategies addressing socio-economic factors	
Reducing the risk related to low economic status and homelessness	Offering intensive support and advising a regimen compatible with the patient's life	Offering intensive support and advising a regimen compatible with the patient's life
Arranging social support	Discussing with the patients their social relationships	
	Finding out whether a partner is supportive or not	Finding out whether a partner is supportive or not

limited to the cases.

The opinion of several HNCs that when adherence is not a problem during the first period, there will be no problems in the longer term is not congruent with evidence. Being adherent in the beginning does not predict future adherence; adherence is a dynamic phenomenon that varies over time, as life is dynamic and unpredictable. Adherence decreases over time[21,22].

In discussing the cases, the HNCs in the focus groups often start by giving advice to the patient to solve the problem or give general information. Attention to or analysis of underlying problems was discussed only to a limited extent.

The strategies used to promote or to maintain adherence are for the greater part in accordance with the literature[20,23]. The use of explicitly designed interventions is limited. Several of the strategies the HNCs use are also used in interventions that were tested and proven to be effective in promoting adherence to ART[15]. In reference to the cases**,** HNCs mostly seem to base their practice on experience rather than literature as they did not use theoretical concepts in discussing the cases that were applicable in that patient's situation. Motivational interviewing was discussed as method to discuss patient's motivation to take the medication (adherently) and during the focus group interviews twice reference was made to the literature in general to justify their statements: 'the literature says'. In the individual interview one HNC used self-efficacy as a theoretical concept and referred to a social-cognitive behavioural model in relation to the motivation of being adherent. However, experience seems to be a reasonably adequate guide, for experiential knowledge about influencing adherence proves largely congruent with research findings.

We found that some HNCs advise patients to stop treatment for a while when a patient remains non-adherent. Some of them even advise stopping until AIDS-related illness occurs. However, based on recent studies this is not without risk. Viral rebound, acute retroviral syndrome, decline of CD4-cell count, HIV-disease progression or death and development of drug resistance may occur and treatment interruptions often result in rapid reductions in CD4-cells[16]. Low levels of Cd4-cells (< 350), worsens illness progression in the longer term[24,25]. The choice to stop HAART in case of non-adherence should only be considered if no other option exists (and the risk of the development of resistance is high).

The HNCs in our study are conscious of the harshness of HIV and its treatment. They show compassion while helping patients to take control of their lives and their disease. They are dedicated to giving these patients the best possible care while offering maximum support. This study gives good insight into the adherence strategies used in Dutch HIV-care and what aspects are underexposed. A more systematic approach to promoting and maintaining high levels of adherence would be desirable. Whether this would lead to improved outcomes remains to be seen. The information about strategies used in daily practice was not described extensively in the literature before.

Clinical considerations

1. Dutch HIV nurse consultants use multiple adherence promoting strategies that can be applied in the development of adherence promoting interventions.
2. HIV nurse consultants can have a considerable role in supporting HIV-patients in being adherent when seeing patients regularly in consultation in the outpatient clinic.
3. A more systematic approach based on current evidence to support patients in being adherent is desirable.

Acknowledgements

The authors gratefully acknowledge the contribution of the HIV-nurse consultants from the Dutch AIDS-treatment centres.

References

1. Mocroft A, Ledergerber B, Katlama C, Kirk O, Reiss P, d'Arminio Monforte A et al.: Decline in the AIDS and death rates in the EuroSIDA study: an observational study. *Lancet* 2003, 362: 22-9.
2. Bangsberg DR, Perry S, Charlebois ED, Clark RA, Roberston M, Zolopa AR et al.: Non-adherence to highly active antiretroviral therapy predicts progression to AIDS. *Aids* 2001, 15: 1181-1183.
3. Lima VD, Geller J, Bangsberg DR, Patterson TL, Daniel M, Kerr T et al.: The effect of adherence on the association between depressive symptoms and mortality among HIV-infected individuals first initiating HAART. *Aids* 2007, 21: 1175-1183.
4. Hogg RS, Heath K, Bangsberg D, Yip B, Press N, O'Shaughnessy MV et al.: Intermittent use of triple-combination therapy is predictive of mortality at baseline and after 1 year of follow-up. *AIDS* 2002, 16: 1051-1058.
5. McNabb J, Ross JW, Abriola K, Turley C, Nightingale CH, Nicolau DP: Adherence to highly active antiretroviral therapy predicts virologic outcome at an inner-city human immunodeficiency virus clinic. *Clin Infect Dis* 2001, 33: 700-5.
6. Bangsberg DR, Charlebois ED, Grant RM, Holodniy M, Deeks SG, Perry S et al.: High levels of adherence do not prevent accumulation of HIV drug resistance mutations. *Aids* 2003, 17: 1925-1932.
7. Bangsberg DR: Less than 95% adherence to nonnucleoside reverse-transcriptase inhibitor therapy can lead to viral suppression. *Clin Infect Dis* 2006, 43: 939-941.
8. van Meijel B, Gamel C, van Swieten-Duijfjes B, Grypdonck MH: The development of evidence-based nursing interventions: methodological considerations. *J Adv Nurs* 2004, 48: 84-92.
9. Clumeck N, Pozniak A, Raffi F: European AIDS Clinical Society (EACS) guidelines for the clinical management and treatment of HIV-infected adults. *HIV Med* 2008, 9: 65-71.
10. Gazzard BG: British HIV Association Guidelines for the treatment of HIV-1-infected adults with antiretroviral therapy 2008. *HIV Med* 2008, 9: 563-608.
11. Stone VE: Strategies for optimizing adherence to highly active antiretroviral therapy: lessons from research and clinical practice. *Clin Infect Dis* 2001, 33: 865-872.
12. Stone VE: Enhancing adherence to antiretrovirals: strategies and regimens. *MedGenMed* 2002, 4: 22.
13. WHO. Adherence to long-term therapy: evidence for action. 2003. WHO.
14. Amico KR, Harman JJ, Johnson BT: Efficacy of antiretroviral therapy adherence interventions: a research synthesis of trials, 1996 to 2004. *J Acquir Immune Defic Syndr* 2006, 41: 285-297.
15. Simoni JM, Amico KR, Pearson CR, Malow R: Strategies for promoting adherence to antiretroviral therapy: a review of the literature. *Curr Infect Dis Rep* 2008, 10: 515-521.
16. Bartlett JG, Lane HC. Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents. 1-139. 3-11-2008.
17. Gerbert B, Bronstone A, Clanon K, Abercrombie P, Bangsberg D: Combination antiretroviral therapy: health care providers confront emerging dilemmas. *AIDS Care* 2000, 12: 409-421.
18. Gras L, Aighem Av, Smit C, Zaheri S, Schuitemaker H, Wof F. Monitoring of Human Immunodefciency virus (HIV) Infection in the Netherlands. 1-120. 2008. Amsterdam, Stichting HIV Monitoring.
19. Kuckartz U: *winMAX Scientific Text Analysis For the Social Science*. Berlin: BSS; 1998.
20. Vervoort SC, Borleffs JC, Hoepelman AI, Grypdonck MH: Adherence in antiretroviral therapy: a review of qualitative studies. *Aids* 2007, 21: 271-81.

21. Liu H, Miller LG, Hays RD, Golin CE, Wu T, Wenger NS et al.: Repeated measures longitudinal analyses of HIV virologic response as a function of percent adherence, dose timing, genotypic sensitivity, and other factors. *J Acquir Immune Defic Syndr* 2006, 41: 315-322.
22. Parruti G, Manzoli L, Toro PM, D’Amico G, Rotolo S, Graziani V et al.: Long-term adherence to first-line highly active antiretroviral therapy in a hospital-based cohort: predictors and impact on virologic response and relapse. *AIDS Patient Care STDS* 2006, 20: 48-56.
23. Mills EJ, Nachega JB, Bangsberg DR, Singh S, Rachlis B, Wu P et al.: Adherence to HAART: a systematic review of developed and developing nation patient-reported barriers and facilitators. *PLoS Med* 2006, 3: e438.
24. Robbins GK, Spritzler JG, Chan ES, Asmuth DM, Gandhi RT, Rodriguez BA et al.: Incomplete reconstitution of T cell subsets on combination antiretroviral therapy in the AIDS Clinical Trials Group protocol 384. *Clin Infect Dis* 2009, 48: 350-361.
25. Geng EH, Deeks SG: CD4+ T cell recovery with antiretroviral therapy: more than the sum of the parts. *Clin Infect Dis* 2009, 48: 362-364.

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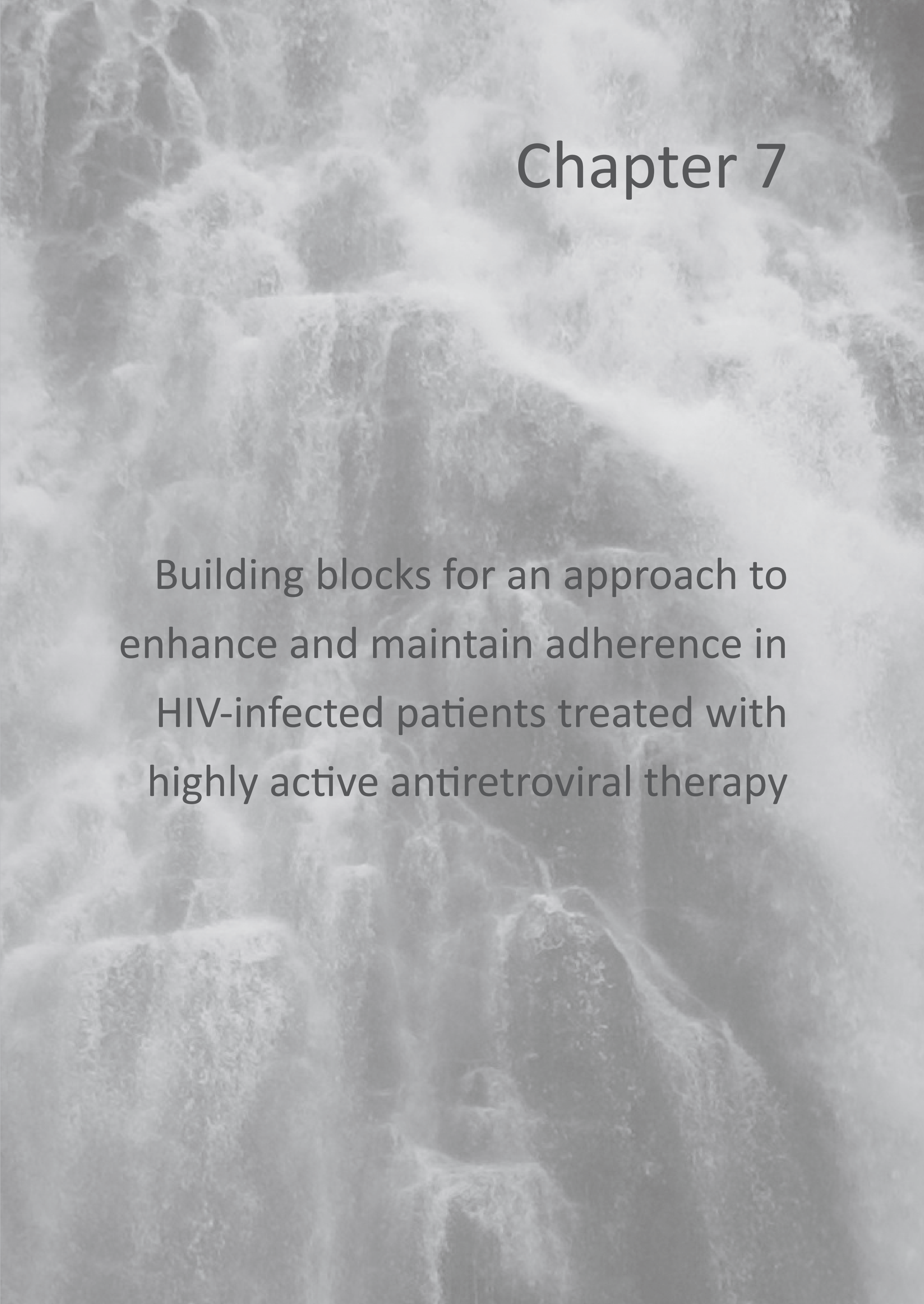

Chapter 7

Building blocks for an approach to enhance and maintain adherence in HIV-infected patients treated with highly active antiretroviral therapy

Introduction

The success of treatment with highly antiretroviral therapy (HAART) depends on long-term adherence to treatment. Suboptimal adherence to HAART has proven to be the most common reason for treatment failure. Adherence of 95% or more is necessary to reach viral suppression[1]. As adherence is of the utmost importance for treatment success this makes it the central theme in the care for HIV-infected patients. Nurses make an important contribution to supporting HIV-infected patients who are self-managing HIV and adherence (Chapter 5 & 6). To support patients in attaining long-term high levels of adherence, a good approach to enhance and maintain adherence is needed which allows the tailoring of support to the individual patient's characteristics[2].

In this chapter we describe the building blocks for an approach to enhance and maintain adherence to HAART. Based on the results of our study, the approach provides for life-long care for HIV-infected patients before the start of, at the start of and during antiretroviral treatment. The approach and its basic principles are aimed at providing nurses with information that is helpful in understanding each patient's unique situation and it clarifies the type of support that is judged to be appropriate and effective. Support that anticipates the patients' individual needs leads to optimal effectiveness[3,4]. Hence individualization based on understanding the behaviour, thoughts and considerations of the patients is an important characteristic of the approach.

In the methods section we first describe the procedure for designing the approach. Second, we present the basic principles of the approach followed by the description of the content of the approach itself; we discuss what support is appropriate during each different phase taking into account the characteristics of the patients and their situations.

Finally in the discussion we reflect on the approach and outline further steps to refine and validate it.

Method

The approach we describe is based on the qualitative studies we conducted to generate and explore underlying processes that are at play in adherence to HAART from patients' perspective (Chapters 3 & 4) and on the review of the literature on factors influencing adherence to HAART (Chapter 2).

In our qualitative study, in-depth interviews were held with 30 patients to elicit their experiences, perceptions and attitudes regarding HAART and adherence. The findings showed that adherence behaviour changes over time and is primarily influenced by the experience of being HIV-infected by acceptance or non-acceptance of HIV in life. Actual adherence is primarily influenced by these experiences. The experience of being HIV-infected determines the way people deal with obstacles and influencing factors (Chapter 3). In the analysis of our interviews, considerations affecting respondents' disclosure, choices and behaviour raised the central theme of living with HIV and its relationship to adherence to antiretroviral therapy. Using data from 44 interviews we analyzed this specific theme to deepen the understanding of the disclosure processes in HIV patients and its specific relationship to adherence (Chapter 4).

The literature review identified influencing factors of adherence and non-adherence. In this review, recommendations for healthcare providers were described and are incorporated in this approach (Chapter 2). The study on strategies used by HIV nurse consultants in the Netherlands to promote adherence gave insight into the prevalent working procedures in daily practice and adherence was used as a supplementary source of information (Chapter 6). Finally, we made use of a recent review that provided an overview of clinical-based strategies for promoting adherence to antiretroviral therapy, based on intervention studies[5].

Basic principles of the approach to enhance and maintain adherence

Continuous support

Our data (Chapter 3) and analysis of the literature (Chapter 2) suggest there is a need for sustained adherence support rather than an intervention that is applied during a fixed period, as adherence needs ongoing attention. It is a lifelong struggle for HIV-infected people to remain adherent -day after day, year after year- and to refuse to give in to the temptation of skipping a dose, postponing treatment when it is inconvenient to take it at the right time, and to deal with obstacles to adherence. Patients' level of adherence is not static and can change over time[6-9]. Therefore, a long-term approach is required, providing sustained support to enhance and maintain adherence. The need for lasting support is also borne out by the observation that the impact of most of the interventions used and tested in experimental studies fades away after the intervention is discontinued and that interventions provided over a longer period are more effective[2,10].

Acceptance of HIV: key factor in adherence

In our study (Chapter 3) acceptance has come to the fore as a crucial factor in determining the processes leading to adherence or non-adherence. Acceptance means that patients recognize that they cannot change or avoid the situation of being HIV-infected. HIV-infected patients experience that something has happened to them in the past (for which they may or may not be responsible), that should not have happened. It forces them to deal with it as it is an irreversible truth, making them acknowledge HIV and its consequences. They accept the situation. Acceptance means that patients can face the threat of HIV and therefore they can give priority to the exigencies of therapy. Non-acceptance implies that the patients cannot face the threat that HIV entails for their life and lifestyle. They want to live their life undisturbed by HIV.

Actual adherence is the result of two elements: the determination to be adherent and the way patients deal with the obstacles they encounter. Patients can adopt one of two basic stances: ‘‘Being determined to be adherent’’ (life requires adequate HAART) or ‘‘medication is subordinate to other priorities in life’’ (HAART should not take precedence over life). This basic stance defines their determination to be adherent. It consequently determines the way they deal with temporary obstacles and other influencing factors and thus influences the actual level of adherence. The basic stance that is adopted is founded on acceptance of being HIV positive. Patients are either ‘‘prepared to acknowledge the influence of HIV on their life’’ - hereafter we refer to them as acceptors - or ‘‘not prepared to let HIV influence their life’’ -hereafter the non-acceptors. In the latter group, situations in which activities would have to be given up for HAART threaten adherence. Neither this basic stance nor the reactions to temporary obstacles are static; both can change over time, and not only in a ‘positive’ direction. Changes in acceptance may be caused by experiences that are related to being HIV infected. If and when a patient’s acceptance status is going to change cannot be predicted.

Appropriate strategies and support to enhance and maintain adherence have to be individualized according to the degree of acceptance of being HIV-infected and possible temporary obstacles.

The role of the care provider

All HIV-infected patients experience being HIV-infected in their own way. For support to be effective, a patient’s unique situation should be the starting point and exploring their experience with being HIV-infected is the basis for the care provided. Exploring patients' experiences clarifies whether they accept being HIV-infected or not and provides rich information that allows the care provider to decide what support may be appropriate.

The patients' experience of their relationship with the care provider influences how they manage their disease and its consequences (including adherence) (Chapter 2). Open and supportive communication and a collaborative model of the patient-provider relationship, influence adherence positively. To achieve this, the care provider has to leave room for the patients to talk about their life and unique illness experience. Indeed, our interviews clearly demonstrated that patients really want to tell their stories and appreciate someone listening to them. In dialogue both the patient and the care provider bring in their expertise. Trust in the therapeutic relationship can be built on 'being known' by the care provider, the care provider being empathic and taking patients seriously. Our data suggest that it is important to show acceptance of the patient as a person with HIV, someone for whom being an HIV patient is part of their identity, to show interest in the quality of the patient's life and to show concern about the patient. Patients have to feel accepted for who they are, what they have done and what has happened to them. Being non-judgemental encourages patients to accurately report about their feelings and behaviour[5]. To create a trusting relationship and to adjust care to the specific patient, it seems important that as far as it is possible, patients should always see the same physician and HIV nurse consultant.

The approach to enhance and maintain adherence

The approach describes what is important in providing care focusing on supporting HIV-infected patients to self-manage their illness and its consequences. The relevant building blocks are described for each of the three phases: the phase between the diagnosis and the indication for treatment, the phase of preparation to HAART and the phase during treatment. Phase 1 may be very short or even immediately followed by phase 2 and 3 for some patients. The third phase is (as yet) lifelong.

Phase I: The phase between diagnosis and indication for treatment

Adherence support of HIV-infected patients starts at the first visit directly when patients attend the outpatient clinic. In this phase, which precedes the start of HAART, attention should already be given to the acceptation process and themes related to acceptance and future adherence.

In this phase by their coping efforts most HIV-patients manage to limit the influence of HIV on their daily life.

Phase 2: The phase of preparation to HAART

Adherence support of HIV-infected patients focuses on preparing them for the actual start of treatment. Hearing that medication is indicated can be the trigger for a change in the experience of being HIV-positive and puts HIV back into the centre of life. Patients have to cope with the news that treatment is indicated, i.e. that the illness is progressing.

Phase 3: Treatment phase

This phase begins with the start of the treatment and lasts throughout life. Adherence is a lifelong issue and adherence support should be provided throughout life. How patients incorporate treatment into their lives and the role HIV plays in life and its relationship to the patients' adherence is central to this phase.

Some but not all themes are relevant in all phases. Therefore we have ordered the discussion of the themes according to the phases in which they apply. We first discuss the themes relevant to all three phases, thereafter those that apply to two or only one phase. Based on our findings and other sources, we first briefly explain what each theme involves. Thereafter, in a table we indicate the support judged to be necessary or advisable. In order to promote the readability we use 'he/him/his' for the patient were also 'she/her' is equally applicable.

As far as possible, the order of the themes has been defined by the process of adherence support as it usually unfolds itself in practice. Where a different approach is necessary for acceptors and non-acceptors these differences are described.

In general the care for the acceptors is aimed at providing knowledge and practical solutions and focus on how to behave in specific situations if obstacles to adherence occur. For non-acceptors the care focuses on tailoring treatment to the patients' circumstances and helping patients to accept the place of HIV in their life. We repeat that care providers should be fully aware that acceptance is not static and hence patients can change (even more than once) from one category to the other.

As individualization is a key issue for good adherence support, exploring the patient's situation regarding specific aspects is the basis for the choices to be made in adherence support. We have indicated what the specific topics are that need exploration.

Building blocks for phase 1, phase 2 and phase 3

1. Illness acceptance

During all phases attention needs to be given to the place HIV has in the patients' life in order to assess the degree of acceptance of being HIV-infected. Acceptance can be linked to locus of control. Patients who have an external locus of control will not take responsibility for what has happened and are less likely to stop blaming themselves. Their role in therapy will be more passive. Persons with an internal locus of control are more active in solving problems as they believe that they have control over their life and can change their situation[11]. They believe that the course of illness (at least in part) can be affected by their behaviour, for instance taking medication correctly.

Focus differs in each phase. In the first phase, to reach acceptance of HIV in life, patients need to go on with their life, leave the question of guilt behind and not dwell on the past. For most people hearing the HIV-diagnosis, either expected or unexpected, is an enormous shock. The diagnosis entails a confrontation with the finiteness of life and the uncertainty about a life in which HIV has a role. Stigma, guilt, blame or being a victim are central themes in coping with HIV.

In the second phase, when treatment is proposed, patients are confronted with the progression of the disease and HIV may be felt to be a threat. Some patients had cherished the hope that they would get away unscathed and with them it would be different they would not need medication. Other patients were convinced that they would never need treatment. The willingness and readiness to start treatment can be considered to be a sign of acceptance of the role of HIV in one's life. Consequently, patients who postpone the start of HAART several times or patients who give external reasons for deciding to start treatment may be non-acceptors. The news about the need for treatment can lead to actively coping with HIV for non-acceptors, resulting in an increase in the degree of acceptance of being HIV-infected.

In the third phase the experience of taking medication and its consequences influence a patient's level of acceptance. We assume that reported non-adherence can be a sign of non-acceptance, or a change in coping with the situation of being HIV-positive. For non-acceptors the use of medication constantly puts HIV into the centre of their lives. It makes coping with HIV more difficult and can lead to non-adherence. Also repeatedly expressing feelings of guilt, questioning why HIV has happened to them or denying the consequences of being HIV infected can be signals of non-acceptance.

Acquiring insight into the patient’s level of acceptance

Phase 1

The focus of the care provided should be on supporting the patient’s coping process in order to help him deal with the HIV diagnosis, leading to self-management of his illness as a part of life. To support the patient in this coping process and help him to reach acceptance of HIV, we consider it important for the nurse to give the patient room to relate his experience of hearing the diagnosis of HIV. Sympathetic and non-judgemental listening can give insight into what type of support can foster the patient’s coping process. We assume that a patient who is able to tell his story may release his emotions, leading to mitigated emotions and to discovering ways to handle living a life of which HIV has become a part.

Phase 2

When told that HAART is indicated, supportive listening can help the patient to handle the news. Supportive listening includes communicating that the nurse understands the emotional significance of the message and sympathises with the patient[12].

In cases of non-acceptance, if medically possible, the focus has to be on helping the patient to accept the place of the disease in life before HAART is started. If the patient continues not to accept HIV then he/she should be helped to keep the friction between life and HIV as limited as possible. It is important to live life in the best possible way. Major conflicts will lead to non-adherence and thus require medical concessions.

The nurse has to prepare an acceptor for the possibility that if something happens to change his life, this can have consequences for the way he lives with HIV. Such events can lead to non-acceptance of HIV and therefore to difficulties with adherence to treatment. We assume it is useful for the nurse to teach the acceptor that if he experiences such an event or a change in his experience of being HIV-infected, he should ask for the help of his nurse in coping with the situation in order to prevent non-adherence.

Phase 3:

The nurse should evaluate the patient’s current situation and his experience with taking medication every day. This will provide insight into the patient’s level of acceptance. During follow-up visits, attention should be given to the patient’s experience with the place of HIV in life and with taking treatment. Based on the evaluated elements of phase 3 as further described, this can provide insight in patient’s level of acceptance.

We consider it important that the nurse discusses with the non-accepting patient how the friction between life and HIV can be limited to the greatest extent possible. In addition, the nurse should explore what the patient needs to cope with the situation and if he/she can be helped to deal with non-acceptance. Support should be given to change the non-accepting stance into an accepting stance.

For acceptors the focus lies on pro-active coping with events that may threaten acceptance.

2. Insight into the illness, its treatment and adherence

Knowledge about the illness and its treatment is helpful in self-managing the illness and influences adherence behaviour (Chapter 2). Information can reduce stress and uncertainty[13], but can also lead to stress because knowing what can happen in the future is experienced as too threatening. Based on the literature on coping, a difference can be made between the 'monitors' who want as much information as possible, and the 'blunters' who avoid information as they experience it as too threatening[14]. In giving information it is important to know whether patients are open to receiving information.

Patients who accept HIV generally want more detailed information and a higher level of insight is to be expected in this category than in non-acceptors. However, the need for information also varies within the group of acceptors. As a rule non-acceptors do not want much information as it confronts them with HIV and its consequences (Chapter 3). In order to be able to make proper decisions these patients have to be given information up to a certain level. The information given needs to be brief and basic[15].

Before giving information, asking open questions to assess the patients' knowledge allows the individualization of information and acquisition of information on the existence of misinformation. The information given has to be adjusted to what patients already know and what they can handle at that point in time, and to be adjusted to the patients' level of acceptance, and their interest[16]. If it is not the proper time to give information, another time can be agreed upon.

The focus of the information is different in each phase. During the first phase the information is aimed at providing insight into the illness the patient is confronted with. During the phase of treatment initiation patients need to have a certain level of insight into HIV, its treatment and the importance of taking treatment adherently. This knowledge supports patients in making appropriate decisions. During the treatment phase possible misconceptions about adherence should be detected. What patients 'know' can be influenced by a personal interpretation of good adherence practice that can differ considerably from the correct medication regimen. These misconceptions can be a result of cognitive dissonance: patients' 'knowledge' is adjusted to reduce the tension created by their non-adherent behaviour (Chapters 2 & 3). Incorrect information received from peers or people around them is an important source of information on the basis of which patients adjust their beliefs. It is expected that non-acceptors develop misconceptions more easily. However, in our study misconceptions were also seen in acceptors who had been treated with HAART for several years (Chapter 3).

Assessing the patient’s insight into the illness and providing information

In all three phases

Before information is given, the nurse should ask questions concerning the patient’s knowledge to acquire insight into what additional information is needed or whether correction of misconceptions/ false premises is necessary. It is important to recognize that incorrect ideas can be a way of coping with HIV.

Phase 1

The nurse should give information tailored to the patient on what HIV is, what it does to the body and the current status of HIV as a chronic condition in relation to the treatment possibilities. Any misinformation/misconceptions detected can be corrected by the nurse by providing the correct information. Nurses should be aware that their message may be less attractive than those of others and should keep in mind that those who are accorded the greatest authority will be believed.

Being informed when the patient is expected to start HAART can diminish uncertainty. Telling the patient when HAART is expected to start will diminish uncertainty.

Phase 2

The nurse should give information to promote understanding of why adherence is important and what its rules are (strict times, never skip a dose, take all pills as prescribed, how to act in case of forgetting or vomiting). It should be clearly pointed out that the first regimen has the highest success rate[5]. If a patient is keen to receive information and wants to know what will happen inside their body, more detailed information can be given on how the medication works, the reason for giving a combination of medications, plasma levels (drawing a graph), and an explanation of the risk for resistance.

The nurse has to instruct the patient that self-determined treatment interruptions or stopping the medication can cause serious harm[5]. The patient should be instructed to consult the nurse if medication intake has become unbearable due to side effects or the confrontation with HIV and to discuss the problem instead of stopping treatment by himself. Providing written information congruent with the verbal information gives the patient the opportunity to reread the information and is essential during consultations and information sessions, as due to the emotional character of the information the patient stop paying attention to everything the nurse is saying (selective attention).

The nurse should provide concrete instructions about the prescribed medication (e.g., food prescriptions). The nurse can show pictures or examples of the prescribed pills to prepare the patient as to what to expect (Chapter 6).

A written medication schedule with the agreed times at which treatment will be taken is helpful and supports the patient at home.

Phase 3

We consider it important for the nurse to evaluate the patient’s adherence behaviour to acquire insight into what the patient’s decisions are based on. The nurse should repeat the information and instructions about adherence requirements and about the risk of developing resistance, as the patient’s ideas about what “adherence” entails may change due to noncompliant behaviour or to information from others that legitimizes non-compliant behaviour.

3. Disclosure and social and emotional support

Disclosure influences adherence and should therefore be a theme of adherence support before HAART is started (Chapters 2, 3 & 4). When first infected, HIV patients need to take time to adjust to the idea of being HIV-infected before they are able to decide whether they want to disclose their HIV-positive status. After having been HIV-infected for some time and when they feel that their HIV status is definitive, disclosure is often reconsidered. When HAART is started, disclosure is again reconsidered – this time in relation to adherence.

Acceptors will mainly base their disclosure choices on rational arguments, weighing the pros and cons of disclosure. The non-acceptors' choice is based on preventing themselves from being confronted with HIV and on anticipation of negative reactions.

Being determined to be adherent can be a reason for disclosure at the start of treatment because being able to take treatment in sight of others makes adherence easier. When patients want to arrange social adherence support, disclosure is obviously needed.

Helping the patient to make a rational choice about disclosure issues

In all three phases

The nurse can prepare a patient who wants to disclose his HIV-status for the possible negative consequences of disclosure and help him to consider these consequences rationally. When disclosure is again reconsidered after some time, the nurse can once again explore with the patient the expected positive and negative consequences of disclosure or non-disclosure and its future effects on adherence. The nurse can discuss with the patient the awkward feelings that may be generated by not revealing his status to persons he is close to.

A patient who chooses not to disclose has to be warned about the consequences of accidental disclosure.

It is important that the patient is prepared for the fact that the act of disclosing can be a considerable problem and that he develops particular skills and/or arranges specific circumstances in preparation of the moment he reveals his HIV-status to others. The nurses can provide tips on how to approach others and if desired the patient can practice disclosure communication with the nurse.

Phase 1

If necessary, the patients' ideas about disclosure should be discussed to help him to make more rational choices concerning whether or not to disclose and to whom. The patient indeed is sometimes hindered by emotions, feelings of guilt or other non-rational considerations in deciding about disclosure. We consider it important to advise him to tell at least one close relation for emotional support.

Phase 2

We consider it important that at the start of treatment the nurse once again discusses disclosure and the risk of unintended disclosure due to taking medication or to side effects. This discussion gives insight into the patient's current disclosure behaviour and to with whom he has or has not disclosed being HIV-infected.

The nurse and patient should discuss the possible positive and negative consequences of disclosure. Our data show that it is apparent that some nurses seem to encourage disclosure without giving due consideration to reasons for non-disclosure that may be present in the patient's situation (Chapter 6). To avoid non-adherence due to the fear of accidental disclosure by taking HAART, 'if- then' statements can be formulated with the patient about situations in which the risk of accidental disclosure threatens adherence[17-20]. Tips and tricks about how to take treatment secretly can be provided. The use of reminders should be weighed against the risk of unwanted disclosure. The use of a silent reminder may be an option.

As some patients have already told people that they have another illness as their reason for symptoms or having to explain regular hospital visits and some patients intend to reveal another illness as a reason for taking treatment, it is important to warn the patient that taking the medication in sight of others can point to HIV.

Nurses can discuss with a patient who has not disclosed his HIV-status if he wants to disclose being HIV-infected for social or practical support reasons. For non-acceptors the time of medication intake in particular needs to be carefully chosen to diminish the risk of unwanted disclosure, as non-disclosure is likely to be the patient's choice.

Phase 3

We consider it important to evaluate the role of disclosure in the patient's adherence behaviour. The nurse can discuss with the patient whether nondisclosure is experienced as a risk-factor for adherence or whether taking treatment is a risk-factor for unwanted disclosure. Discussing how patients can handle these situations can improve their skills in future situations. Tips and tricks to take treatment in secret and 'if then' statements, can be discussed again. If another illness has been 'revealed' as an explanation of why treatment is being taken, the nurse can evaluate how this has worked out. The risk taken can be discussed again and the option of telling the truth can be weighed against the risks involved. If a patient decides to reveal the HIV-status in order to optimize adherence, support in doing so can be provided.

4. Moods

Moods such as tenseness, depression and anger affect adherence negatively (Chapter 2). The influence of one's mood or depression is expected to differ depending on the patient's level of acceptance of being HIV-infected. Being overwhelmed by negative moods is a risk factor for non-adherence for both acceptors and non-acceptors. However, we suppose that in non-acceptors negative moods may lead to earlier non-adherence. In depression it is important to treat the depression before starting HAART[21].

Exploring the patient's psychological status
Phase 1 The nurse should ask the patient at the beginning of the care trajectory about his past and current psychological status and whether he is receiving treatment or therapy for a psychological or psychiatric problem.
Phase 2 The nurse should discuss with the patient his current psychological status and explain the possible influence on adherence. If the patient is depressed they should be advised to consider treatment for it. The nurse should refer the patient to another professional for treatment of depressive feelings or a psychological problem.
Phase 3 The nurse can explore whether the patient experiences a change in his psychological wellbeing. If the patient's mood has changed, it is important to know whether it has led to non-adherence and what support the patient needs to manage their changed psychological status. The nurse can refer the patient to a psychiatrist, psychologist, social worker or another professional if the problem is outside his/her competence.

Building blocks for phase 2 and 3

5. Medication ambivalence

Ambivalence towards medication -HAART is seen as both lifesaving and toxic- is a risk factor for non-adherence (Chapters 2 & 3). Ambivalence before starting medication can be based on or expressed in terms of patients' past experience with taking treatment, their reaction to other HIV-patients taking treatment or the attitude towards medication in general. During treatment ambivalent feelings may be nurtured by information from others or may be caused by the occurrence of side effects.

Patients who start treatment based on laboratory results (CD4 count) without having HIV-related symptoms are more likely to be ambivalent. The treatment may cause them to become sick while they were not before. Experiencing side effects from treatment for a disease that has only been confirmed by laboratory results leads more easily to ambivalence in non-acceptors. Acceptors are likely to give precedence to the long-term effects of medication and stay adherent. Using negatively-loaded names to refer to the medication can be a sign of ambivalence (Chapter 3).

Evaluating risk factors for future ambivalence and preparing the patient to deal with potential ambivalent feelings
<u>Phase 2</u> The nurse should evaluate the patient's attitude toward HAART and his opinion about medication in general. We consider it important to prepare the patient to cope with future ambivalence and subsequently prevent ambivalence-related non-adherence. Explaining why ambivalence can occur and the risk of non-adherence that it poses are important. Understanding what can happen enhances the feeling of control and can help the patient to interpret signs of ambivalence and proactively cope with it.
<u>Phase 3</u> To what extent the patient experiences ambivalence toward the medication should be evaluated. The nurse can assess whether ambivalent feelings have come up, by asking the patient how the necessity of taking treatment is experienced.

6. The fit between therapy and daily life

The key issue in optimizing adherence is to adapt the medication to the patients' life (Chapter 2) by choosing a regimen that fits into their life. For acceptors fitting treatment maximizes adherence. In non-acceptors a fitting regimen leads to fewer conflicts between a normal life and adherence to HAART.

As changes in life (work, living situation, etc.) can have consequences for patients' daily routines, the treatment may no longer fit into their lives.

Fitting treatment into daily life
Phase 2: The nurse should explore with the patient which regimen fits best into their lifestyle. The fact that weekday habits differ from weekend habits should be taken into account. It is important that the patient chooses medication times that will work in both routines. If this is not possible, which habits should take priority can be discussed with the patient. The patient should be reminded to take the risk of unwanted disclosure into account when treatment times are chosen. Adjustments of lifestyle to treatment in order to optimize adherence can be discussed with acceptors and possibly realized. In non-acceptors it is preferable to adjust the medication schedule to lifestyle as much as possible instead of adjusting life to medication. The nurse can discuss with parents of young children how to fit medication intake into the family's schedule in order to avoid pill-taking conflicting with child-rearing or household tasks.
Phase 3: The nurse needs to evaluate whether the chosen regimen and the times that treatment is taken still fit into the patient's lifestyle. If, due to changes in the patient's daily life, the regimen or schedule is no longer working, adjustments can be made. In some situations a change of regimen is indicated to reduce the risk of non-adherence.

7. Side effects

Unbearable side effects can be a reason for patients to skip doses or stop medication (Chapter 2). Patients have to be informed (in both verbal and written form) about and prepared for the major possible side effects of their specific regimen, both short-term and long-term. Explaining why some side effects occur helps patients to understand how the medication works and what the side effects indicate. It avoids associating side effects with too high a dosage. Understanding rationally what takes place when side effects occur may avoid improper reactions such as stopping treatment or skipping a dose.

Acceptors usually remain adherent as they have anticipated the possible occurrence of side effects (Chapter 3). The long-term effect of the treatment motivates them to do so. Acceptors who are really ill are likely to make an appointment with their physician to discuss the problem. Non-acceptors are more likely to stop taking medication in order to avoid side effects. They interpret side effects as a sign that the treatment is too much for the body.

Preparing the patient for possible unpleasant and distressing side effects, evaluating whether side effects occurred and whether the patient can manage/cope with the side effects
Phase 2 The nurse should inform the patient about the possible major side effects. What is told needs to be adjusted to what a patient can handle. Detailed information on side effects can be experienced as too threatening and can lead to the start of treatment being postponed. It is important that the nurse provides instructions on how to manage the side effects. In anticipation of side effects, a prescription for symptom-reducing medication can be given. In informing non-acceptors about side effects it is important to take into account that this information can lead to a greater aversion to the medication. A patient's life is already disturbed by the need to take medication and side effects can worsen that.
Phase 3 During each follow up visit at the outpatient clinic, nurse and patient should discuss whether side effects have occurred. If they have, the effect on the patient's quality of life and the influence on the patient's adherence behaviour have to be discussed. Some non-acceptors may have chosen already to stop medication, without discussing it with their doctor first. In both categories of patients, options to manage the specific side effects can be discussed. Co-medication can be prescribed, tips and tricks can be given to diminish the side effects or the antiretroviral medication can be changed[5].

8. Self-efficacy

A patient's self-efficacy, the confidence in his ability to behave in a certain way in order to achieve a certain goal[22], i.e. being adherent, is related to medication adherence. Studies of HIV-infected patients confirm that higher self-efficacy leads to higher medication adherence[23-26]. Insight into patients' self-efficacy enables the level of support to be adjusted to the patients' needs.

A few studies have validated scales for HIV treatment adherence self-efficacy. These scales, which come in different forms, are based on Bandura's theory of self-efficacy[22,25,27,28]. The advantages of the use of a standardized questionnaire in care need to be balanced against the possible negative influence as its use can lead to a more distant relationship between the patient and the professional. We consider the use of a scale to measure self-efficacy more preferable for acceptors. For some patients, both acceptors and non-acceptors, hearing the story of an experienced peer can be helpful in preparing to take HAART adherently and it may help to plan how to overcome barriers[29]. Some patients also more readily accept appraisal and advice from their peers than from professionals. However, not all patients appreciate contact with peers who are unfamiliar to them.

Acquiring insight into and increasing the patient’s self-efficacy
Phase 2. The nurse should explore the patient’s past experiences with taking medication in general and discuss the patient’s beliefs about his ability to be adherent. Support can be adjusted to the patient’s estimated self-efficacy. Setting reachable goals and practicing with vitamins or sweets may increase self-efficacy. The nurse also can propose that the patients contact an experienced patient to exchange experiences.
Phase 3. The nurse should evaluate with the patient whether he is confident in his ability to take medication adherently for the rest of his life. Questions about the patient’s experiences with taking the medication provide clues for delivering specific care and pointing to successes can promote the patient’s self-efficacy.

9. Proactive coping and problem solving coping skills

Patients’ capacity to organize their lives, their ability to anticipate adherence-threatening situations and the actions to take to prevent an event - proactive coping skills - can also positively influence their level of adherence[18]. Teaching proactive coping skills, by formulating ‘if- then’ statements for example, can help patients to cope with adherence-impeding situations[17-20].

Preparing the patient to deal with situations that threaten adherence, teaching the patient how to anticipate problematic situations and evaluating the patient's skills
Phase 2. The nurse first needs to gain insight into the patient's capacity to organize his life and discuss with the patient his estimated ability to anticipate adherence-threatening situations. The nurse can formulate 'if-then' statements with the patient about concrete situations in which adherence is endangered, taking the patient's habits and lifestyle into account. Non-acceptors can be prepared to take treatment adherently without being overly confronted with HIV. 'If-then' statements pertaining to these specific situations enhance coping with them. The nurse and the patient can weigh the pros and cons of making treatment intake an automatism and prepare the patient for the fact that deviations in daily activities/routines may lead to non-adherence. Practical solutions can be discussed to prevent non-adherence. Reminders can be helpful if tailored to the patient's specific situation, taking into account that a reminder is only useful if the patient is determined to be adherent with the reminder. The use of reminders may be compromised when a patient wants to prevent disclosure. Linking medication time to a fixed habit or recurrent activity can enhance adherence. The exact use of the chosen reminders has to be explained. Practical strategies helpful in coping with practical problems, such as ensuring easy access to pills if a dose has been forgotten should be discussed. Reference to other patients' experiences can be helpful. The nurse can advise the patient to practice with sweets, vitamins or cotrimoxazol when prescribed, before 'the real thing' starts, to find out what the specific obstacles of adherence are in the patient's situation and how to solve possible adherence problems[5]. This also may enhance learning proactive coping skills. We assume that this advice will be more readily accepted by acceptors than by non-acceptors.
Phase 3: The nurse can ask the patient how they solved problems in situations presenting a risk for non-adherence. Discussing what the patient will do if a similar situation occurs and providing tips can improve a patient's problem solving skills. Further skills can be taught. Specific questions can be asked about forgetting doses. If doses are forgotten, examining the reasons for this, (risk situations) provides pointers for proactive coping. The use of reminders can be advised here, taking the pros and cons into account.

10. Substance use

Using substances such as drugs and alcohol can negatively influence adherence[25,30-33]. However, not all studies confirm the association between alcohol or drug use and decreased adherence to HAART[23]. Whether or not other factors influence the association between drugs or alcohol use has been studied to only a limited extent. Some qualitative studies found that in drug users the daily acquisition of drugs is given priority to adherence to medication (Chapter 2). Studies on the relationship between alcohol use and adherence conclude that alcohol can lead to omit medication doses[34]. Furthermore, alcohol use may impair cognitive functions and can lead to a patient's assessment of their ability to take medication correctly, being impaired. Impaired judgement based on alcohol use, such as concerns that alcohol may interact with the medication, can lead to non-adherence and should be taken into account[35].

Our study delivered only limited information on substance use; however, given the potentially negative influence of drug and alcohol use on adherence to HAART, this should be taken into account in providing adherence support.

To minimize the risks to drug users when substance use remains their first priority, the patient can be taught how to handle both needs (the acquisition of drugs and adherence) (Chapter 2). Discussions with alcohol users should be held about their use of alcohol in the past and its influence on other health behaviour and how to avoid this affecting HAART negatively.

Patients can be referred to specialized drug and alcohol services to treat their dependence. Patients' motivation to get professional help can be discussed and motivational techniques can be used.

We think that in the main acceptors are able to organize their lives to meet both needs. Based on our study findings we expect that the priority of drug-using non-acceptors will remain the acquisition of drugs, and that alcohol-related impaired judgment will be seen more in non-acceptors.

Examining the influence of addiction on managing life and adherence

Phase 2

The nurse should explore whether drug use or alcohol use has influenced the patient's health behaviour in the past. The nurse can explain how drug or alcohol use can influence adherence to HAART. A patient using drugs, can be taught how to prevent being at the mercy of drugs at times treatment must be taken. To optimize adherence, professional support or daily observed therapy (DOT), e.g. receiving medication at the methadone post can be arranged.

If a patient is dependent on alcohol, the nurse can discuss at what time of the day alcohol is consumed. Medication times need to be chosen to decrease the likelihood that the patient is under the influence of alcohol when the treatment has to be taken.

In both groups 'if then' questions about situations where drugs or alcohol use is expected to influence adherence can be helpful in learning how to handle these adherence-threatening situations.

The patient's commitment to take medication adherently and being under influence of alcohol or drugs can be discussed.

Phase 3

The nurse should evaluate the impact of substance use in the patient's life and whether it complicates adherence.

Specifically the nurse can ask whether the drug-using patient can handle both needs, the acquisition of drugs and adherence to HAART, and discover whether there is non-adherence or the risk of it. Patients whose lives were previously in disarray may become open to professional support or DOT. Delivering HAART at the methadone post can be considered.

It should be discussed with alcohol users whether alcohol influences their cognitive functioning, possibly leading to misjudgements about correct adherence behaviour. If the patient is open to it and willing to change their health behaviour, an alcohol rehabilitation programme can be advised.

11. Social support

Social support, both substantial and practical, positively influences adherence to antiretroviral treatment, and getting social support obviously requires disclosure (Chapters 2 & 4). Most people disclose to at least one person. Social isolation can lead to non-adherence[36]. Acceptors who disclose their HIV-status can decide whether they want help from others. Most non-acceptors usually do not reveal their HIV status (Chapters 3 & 4). Only some of them are open to practical adherence support from their partner or another close person.

Others who know about the patient's HIV-status and treatment sometimes discourage patients from adhering to treatment (Chapter 2). Non-acceptors can experience being reminded by others as an unwelcome intrusion, leading to doses being skipped (Chapter 3).

Acquiring insight into a patient's social support system, evaluating the patient's experience with social support and enhancing social support

Phase 2:

When discussing the patient's disclosure choices, the nurse evaluates whether social support is an option and who can give it. In discussing this with the patient, the nurse can clarify under which conditions practical support may be helpful. The patient has to be prepared that people in his environment may discourage correct medication intake (Chapter 2). The nurse can explain such behaviour and how this can negatively influence adherence. It can be helpful to teach the patient how to deal with such discouragement.

Phase 3:
The nurse evaluates with the patient whether social support is received, what the patient’s experiences are and whether it leads to positive or negative influences on adherence.
In particular, the influence of the partner should be discussed.
The nurse can discuss how the discouraging reactions have been countered or what the patient will do if they occur.

Building blocks for phase 2

12. Deciding to start HAART

Patient perception of the decision-making process regarding treatment influences adherence. It is important that patients actively participate in the decision-making process (Chapter 3). Active anticipation increases their feeling of responsibility for making the treatment a success. Acceptors usually consent to start treatment if it is advised by the physician. They want to get control over HIV instead of being at its mercy. Taking medication is a way of doing that. In non-acceptors the advice to start treatment threatens the possibility of living a life undisturbed by HIV.

Supporting the patient’s decision to start HAART

It is important to discuss the patient’s motivation to start medication. This makes clear what is important to the patient. This information can be used in follow-up visits to maintain motivation and adherence.
The patient needs to freely decide whether he will start HAART. The patient needs to have some time to get used to the idea that medication is needed.

Building Blocks phase 3

13. Effect of treatment

Patients treated with HAART are found to be motivated to be adherent by their trust and belief in its benefit. Positive effects and visible signs proving that the medication is working are helpful in continuing treatment adherence (Chapter 2). However, patients’ confidence can change over time due to information from others, changing laboratory results and ambivalence.
In non-acceptors, good blood results in spite of non-adherence can further diminish the motivation to take treatment adherently (Chapter 3). Furthermore, patients who are confronted with unexpected negative counts can lose faith in the medication.

Evaluating the effects of the medication

The nurse and the patient should discuss how the patient experiences their body's reactions since starting HAART.
Before giving feedback about blood tests the nurse needs to explore whether the patient wants to be informed and in what detail (see *Insight into the illness, its treatment and adherence*).
The nurse needs to explain that if the laboratory results are good, that is not a license to take treatment less adherently, as further reactions of the body to non-adherent treatment may be less positive and compromise the effectiveness of therapy.

14. Adherence behaviour

The degree of adherence can deteriorate over time[6-8]. To assess the degree of adherence it is important to ask patients to describe their exact pill-taking behaviour. Merely asking whether HAART is being taken as prescribed can lead to an unreliable answer based on an individual's personal interpretation of adherence, something that may not correspond with the correct medication regimen (Chapters 2 & 3). This misconception can be based on cognitive dissonance or limited knowledge of correct adherence behaviour. Most patients are very strict when they first start taking medication but once they are used to it they may become more 'flexible', either in a positive or a negative sense (Chapter 3).

To obtain adequate information about adherence behaviour, questions should be asked with care. Patients need to feel it is normal that taking treatment adherently is difficult[5]. We expect that non-acceptors may give more socially desirable answers as they do not want to be confronted with HIV and its treatment.

Evaluating the patient's adherence behaviour

The nurse should assess whether medication is taken adherently. The regimen and its complexity need to be evaluated from the patient's perspective in order to find out what is and isn't difficult. It is especially important to ask the patient to describe their exact pill-taking behaviour (which pills exactly, taken at what times, with if necessary, the food prescriptions). The use of pictures or examples/dummies of the current pills can make it easier for the patient to point out what is taken.
The nurse can reinforce perfect adherence by praising the patient who reports good adherence[5].

Discussion

The building blocks we have described form the basis of a long-term approach to enhancing and maintaining adherence to antiretroviral therapy. We have integrated the perspective of the patient as it was revealed in our study as well as knowledge about factors influencing self-management and evidence and theories about supporting health behaviour.

Patients' experiences have been given an important place in our approach. The patient's input is considered central to developing effective adherence interventions[37].

Our qualitative study has shown that the way patients deal with obstacles to adherence is primarily influenced by the acceptance or non-acceptance of the consequences of being HIV positive. Supporting adherence therefore needs to be individualized and to fit the level of acceptance of the patient.

Acceptance is not a stable characteristic. As life is dynamic a patient's level of acceptance of being HIV-infected is liable to change. Patients who were able to give HIV a place in their life may fall back into a non-accepting stance when confronted with the consequences and threats of the disease, or call into question the assumptions on which their initial acceptance was based.

Ongoing attention to adherence to treatment is needed as being adherent to treatment is a lifelong struggle for HIV-infected patients, who constantly have to deal with obstacles to adherence.

The proposed approach is constructed to attune the professional support to a particular patient so that optimal effectiveness - the patient becoming and remaining adherent - can be reached. The proposed approach guides the professional in delivering adherence support in different phases, of which the elements described can be adjusted to the specific patient. The focus is on supporting patients in giving their chronic illness a place in their life, which includes self-management of the treatment.

Further steps

The proposed approach will be elaborated further into guidelines which allow the flexible use of the proposed strategies in order to adapt them to a specific patient. Then the approach will be tested in practice by the use of case-studies in a number of patients. Professionals and patients will be involved in this testing. After processing the comments, the approach will be tested in practice. The use of case studies in diverse situations is a proven method of testing a strategy (intervention). Both care providers and care receivers are involved in this method[3,38,39].

The definitive adherence approach will be tested in a trial in which the approach will be compared with another tested intervention whose goal is also treatment success over the longer term, and with the usual care. However, an important consideration is whether the procedure to test the intervention makes sense in a field that is developing so rapidly.

In addition, a study will be conducted to determine how acceptance of the role of HIV in one's life can be fostered.

References

1. Lima VD, Harrigan R, Bangsberg DR, Hogg RS, Gross R, Yip B et al.: The combined effect of modern highly active antiretroviral therapy regimens and adherence on mortality over time. *J Acquir Immune Defic Syndr* 2009, 50: 529-536.
2. Bangsberg DR: Preventing HIV antiretroviral resistance through better monitoring of treatment adherence. *J Infect Dis* 2008, 197 Suppl 3: S272-S278.
3. Gamel C, Grypdonck M, Hengeveld M, Davis B: A method to develop a nursing intervention: the contribution of qualitative studies to the process. *J Adv Nurs* 2001, 33: 806-819.
4. Lauver DR, Ward SE, Heidrich SM, Keller ML, Bowers BJ, Brennan PF et al.: Patient-centered interventions. *Res Nurs Health* 2002, 25: 246-255.
5. Simoni JM, Amico KR, Pearson CR, Malow R: Strategies for promoting adherence to antiretroviral therapy: a review of the literature. *Curr Infect Dis Rep* 2008, 10: 515-521.
6. Godin G, Cote J, Naccache H, Lambert LD, Trottier S: Prediction of adherence to antiretroviral therapy: a one-year longitudinal study. *AIDS Care* 2005, 17: 493-504.
7. Remien RH, Hirky AE, Johnson MO, Weinhardt LS, Whittier D, Le GM: Adherence to medication treatment: a qualitative study of facilitators and barriers among a diverse sample of HIV+ men and women in four US cities. *AIDS Behav* 2003, 7: 61-72.
8. Tesoriero J, French T, Weiss L, Waters M, Finkelstein R, Agins B: Stability of adherence to highly active antiretroviral therapy over time among clients enrolled in the treatment adherence demonstration project. *J Acquir Immune Defic Syndr* 2003, 33: 484-493.
9. Vervoort SC, Grypdonck MH, Grauwe AD, Hoepelman AI, Borleffs JC: Adherence to HAART: processes explaining adherence behavior in acceptors and non-acceptors. *AIDS Care* 2009, 21, 431-438.
10. Rueda S, Park-Syllie LY, Bayoumi A, Tynan AM, Antoniou T, Rourke S et al.: Patient support and education for promoting adherence to highly active antiretroviral therapy for HIV/AIDS (Review). *Cochrane Database Systematic Reviews* 2009.
11. Rotter JB: Generalized expectancies for internal versus external control of reinforcement. *Psychol Monogr* 1966, 80: 1-28.
12. Verhaeghe S: *De confrontatie met traumatisch coma, een studie naar de beleving van familieleden [The confrontaion with traumatic coma, a study of the experiences of family members].* Zelzate: 2007.
13. Grypdonck MH: *Het leven boven de ziekte uittillen; de opdracht van de Verpleegkunde en de Verplegingswetenschap voor chronisch zieken. Inaugurale rede Universiteit Utrecht*, 3 edn. Leiden: Spruyt, Van Mantgen & De Does BV; 1996.
14. Miller SM: Monitoring and blunting: validation of a questionnaire to assess styles of information seeking under threat. *J Pers Soc Psychol* 1987, 52: 345-353.
15. Miller SM: Monitoring versus blunting styles of coping with cancer influence the information patients want and need about their disease. Implications for cancer screening and management. *Cancer* 1995, 76: 167-177.
16. Baart A: *Een theorie van de presentie [A Theory of Presence].* Utrecht: Lemma; 2001.
17. Gollwitzer PM, Brandstatter V: Implementation intentions and effective goal persuit. *Journal of Personality and Social Psychology* 1997, 73: 186-199.
18. Gollwitzer PM: Implementation intentions - Strong effects of simple plans. *American Pshycholgist* 1999, 54: 493-503.

19. Gollwitzer PM, Fujita K, Oettingen G: Planning and implementation of goals. In *Handbook of self regulations: Research, Theory and Application*. Edited by Vohs KD, Baumeister RF. New Uork: Guilford Press; 2004:211-228.
20. Prestwich A, Lawton R, Connor M: The use of implementation intentions and the decision balance sheet in promoting exercise behaviour. *Psychology and health* 2003, 18: 707-721.
21. Borleffs JC, Danner SA, Lange JM, van Everdingen JJ: [CBO guidelines 'Antiretroviral therapy in the Netherlands']. *Ned Tijdschr Geneeskd* 2001, 145: 1585-1589.
22. Bandura A: *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs: Prentice-Hall; 1986.
23. Ammassari A, Trotta MP, Murri R, Castelli F, Narciso P, Noto P et al.: Correlates and predictors of adherence to highly active antiretroviral therapy: overview of published literature. *J Acquir Immune Defic Syndr* 2002, 31 Suppl 3: 123-7.
24. Fogarty L, Roter D, Larson S, Burke J, Gillespie J, Levy R: Patient adherence to HIV medication regimens: a review of published and abstract reports. *Patient Educ Couns* 2002, 46: 93-108.
25. Parsons JT, Rosof E, Mustanski B: Patient-related factors predicting HIV medication adherence among men and women with alcohol problems. *J Health Psychol* 2007, 12: 357-370.
26. Reynolds NR: Adherence to antiretroviral therapies: state of the science. *Curr HIV Res* 2004, 2: 207-214.
27. Kalichman SC, Cain D, Fuhrel A, Eaton L, Di FK, Ertl T: Assessing medication adherence self-efficacy among low-literacy patients: development of a pictographic visual analogue scale. *Health Educ Res* 2005, 20: 24-35.
28. Parsons JT, Rosof E, Mustanski B: Medication adherence mediates the relationship between adherence self-efficacy and biological assessments of HIV health among those with alcohol use disorders. *AIDS Behav* 2008, 12: 95-103.
29. Bandura A: *Social Learning Theory*. New York: General Learning Press; 1977.
30. Deschamps AE, Graeve VD, van Wijngaerden E, De Saar V, Vandamme AM, van Vaerenbergh K et al.: Prevalence and correlates of nonadherence to antiretroviral therapy in a population of HIV patients using Medication Event Monitoring System. *AIDS Patient Care STDS* 2004, 18: 644-57.
31. Golin C, Isasi F, Bontempi JB, Eng E: Secret pills: HIV-positive patients' experiences taking antiretroviral therapy in North Carolina. *AIDS Educ Prev* 2002, 14: 318-29.
32. Samet JH, Horton NJ, Meli S, Freedberg KA, Palepu A: Alcohol consumption and antiretroviral adherence among HIV-infected persons with alcohol problems. *Alcohol Clin Exp Res* 2004, 28: 572-577.
33. Vervoort SC, Borleffs JC, Hoepelman AI, Grypdonck MH: Adherence in antiretroviral therapy: a review of qualitative studies. *Aids* 2007, 21: 271-81.
34. Cook RL, Sereika AM, Hunt SC, Woodward WC, Erlen JA, Conigliaro J: Problem drinking and medicaiton adherence among persons with HIV infection. *Journal of General and Internal Medicine* 2001, 13: 83-86.
35. Rosof EJ, Punzalan JC, Parsons JT: Adherence: How alcohol gets in the way. Dallas.
36. Mills EJ, Nachega JB, Bangsberg DR, Singh S, Rachlis B, Wu P et al.: Adherence to HAART: a systematic review of developed and developing nation patient-reported barriers and facilitators. *PLoS Med* 2006, 3: e438.
37. van Dulmen S., Sluijs E, van DL, De RD, Heerdink R, Bensing J: Furthering patient adherence: a position paper of the international expert forum on patient adherence based on an internet forum discussion. *BMC Health Serv Res* 2008, 8: 47.

38. Morse JM, Penrod J, Hupcey JE: Qualitative outcome analysis: evaluating nursing interventions for complex clinical phenomena. *J Nurs Scholarsh* 2000, 32: 125-130.
39. van Meijel B, Gamel C, van Swieten-Duijfjes B, Grypdonck MH: The development of evidence-based nursing interventions: methodological considerations. *J Adv Nurs* 2004, 48: 84-92.

Chapter 8

General discussion

Introduction

Since the introduction of highly active antiretroviral therapy (HAART) in 1996, improvements have been made which have resulted in medication regimens that are easier for HIV patients to take, with fewer pills and medication that is better tolerated. Still, strict lifelong adherence to treatment is required to obtain optimal treatment success. Adherence to HAART is of the utmost importance for successful treatment making support for adherence one of the central themes in the care of HIV-infected patients. In addition, the risk of transmission of resistant viruses means that paying attention to adherence important for society as a whole.

To attain optimal levels of adherence to treatment, individual experiences of being HIV-infected, being adherent to HAART and the underlying processes of adherence and non-adherence behaviours have to be the starting point of the care provided. Care is more effective if the perspective of the patient is given full consideration[1,2].

Our study was aimed at gaining knowledge about patients' needs and their experiences of taking medication, at their reasons for adherence and non-adherence, and at understanding the complex process of adherence to HAART. This knowledge may contribute to the development of an effective patient-tailored approach to enhance and maintain adherence. Consequently, the focus of our study was on the process of being adherent, i.e. quality, rather than on the result of the process, measuring the level of adherence, i.e. quantity.

Methodology

Studies into patients' perspectives (Chapters 3 & 4).

Because of the number and duration of the interviews and, in particular, the far-reaching depth of the interviews we were able to make use of 'thick' data[3]. The often amazing openness of the interviewees gave us much more information than is presented in this thesis. We used a diverse sample. The diversity is proportionate to the amount of information in the interviews leading to much data that highlighted differences in the experiences in adherence and being HIV-infected. Thus, although we took a diverse sample, we were able to make well founded interpretations.

In recruiting the participants we created a diverse sample based on differences in duration of HIV infection, duration of being on HAART, sex, being in a relationship, having children, and level of education. We used theoretical sampling as much as possible. Theoretical sampling means that after initial sampling additional respondents are recruited for data collection, guided by the developing theory[4].

Selection bias can be a major threat in a study in which respondents are invited to talk freely about a stigmatized illness, but selection bias seems limited. The selection of the Dutch participants (the majority) was done in two ways. The researcher selected eligible participants from patients attending the outpatient clinic, in such a way as to create a diverse sample, or (at a later stage) to meet the criteria of the theoretical sampling. Sometimes with the patient's permission the nurse consultants, who were very familiar with the sampling criteria, notified the researcher of the characteristics of patients eligible for selection for the study. The researcher then approached the patient to inform him/her about the study and to ask whether he/she was willing to participate. It is not known if there were also patients approached by the nurse consultants who refused, as such refusals were not reported to the researcher. Of the 33 patients approached by the researcher only four refused to take part in our study. In Belgium physicians and nurses familiar with the study and its purpose, approached people eligible to be participants in the study. They did not report the number of people who refused to participate.

Data show that both acceptors and non-acceptors participated in our study. Non-acceptors were in the minority, but due to the recruitment procedure and the number of known refusals, it is unlikely that non-acceptors were automatically excluded from the study.

Our study was restricted to Caucasians. Belgium and the Netherlands have highly accessible HIV/AIDS care and almost universal health insurance cover. The findings are restricted to this group. The HIV epidemic affects a much more diverse population than participated in our study. Non-indigenous patients were excluded although they represent a considerable part of the HIV-population in the countries studied. This population differs in many aspects from the population studied including their personal situation (e.g. cause of HIV-infections, post-traumatic stress disorder, being an undocumented illegal, and/or being an asylum seeker) and cultural background. Our results and recommendations are not necessarily applicable or useful to these groups.

Respondents were recruited from four HIV-treatment centres, all academic hospitals. This small number of different settings possibly limited the diversity in respondents' experiences with care. However, the respondents were seen by different physicians and nurses. Variation in experiences with care can be assumed and is also apparent in our data.

The quality of the data collection and thus its validity was enhanced by creating a non-judgmental atmosphere during the interviews. The interviews were conducted by three researchers. The researchers each had a different level of experience of interviewing. One of them, a master's student, interviewed from a more naive position and had a more confrontational questioning style based on natural astonishment. We did not streamline the styles because the different approaches elicited different responses and more diversity. The nature of the interviews was taken into account in the analysis.

Our data set contains both actual and retrospective data. The starting point of our interviews was the here-and-now, but patients either voluntarily offered information about earlier phases in their living with HIV, or were asked to do so. The richness of the data was enhanced by the availability of both concurrent and retrospective data about the health careers of HIV patients. The concomitant availability of concurrent and retrospective data aided in the valid reconstruction of the processes and placed emphasis on some specific aspects of living with a life-threatening illness, which after some time had come to be considered more as a chronic illness. In analyzing the data we were fully aware that these past experiences are subjectively interpreted in the present. The data were treated accordingly. We reconstructed patients' experiences to understand them. The diversity of the data supported the analysis. We continuously checked the data to see if our interpretations were consistent and sustainable.

To enhance the validity of the interpretations we made use of researchers' triangulation during the analysis. To broaden the interpretations and to prevent blind spots, four researchers, each with different backgrounds and experience, were involved in the analysis. The critical reflections on the interpretations increased the validity of the analysis.

Our findings of the processes explaining adherence behaviour in acceptors and non-acceptors have been validated in a sub-study in 14 HIV-infected patients who were treated with HAART for three months (unpublished).

Studies into HIV nursing care (Chapters 5 & 6).

In the descriptive qualitative study carried out among HIV nurse consultants (Chapter 6) about adherence-promoting strategies, two data gathering methods were used - individual interviews and focus group interviews. The combination of these two methods yielded rich data about the strategies used. The individual interviews gave good insight into the differences and commonalities between HIV nurse consultants. The focus group discussions, triggered by the use of cases, brought to light the lines of thought underlying the adherence-promoting strategies. The picture of adherence-promoting strategies was limited, due to recruitment strategy and the number of focus groups that were held. For the individual interviews we recruited one HIV nurse consultant from each of the Dutch HIV treatment centres, with the exception of the centre where the researcher was working. The participants were recruited based on their experience as a HIV nurse consultant; we approached the most experienced nurses. All nurses approached were willing to participate. Initially the same nurse consultants were selected for the focus-group interviews. However, for pragmatic reasons, fewer and different nurse consultants participated in the focus groups. The 19 respondents in the three focus groups were a selection of the 71 HIV nurse consultants in the Netherlands and represented 13 of the 24 HIV treatment centres. Nine of the respondents participated in both data-gathering processes. The data provided by the ten respondents who participated in the focus groups but did not participate in the individual interviews did not differ from the data provided by the other respondents. The depth of the individual interviews was limited as its purpose was to describe the current practice of the adherence-promoting strategies.

Only three focus group interviews were conducted as a fourth was unlikely to deliver any more information. Indeed the third focus group did not yield new insights.

The ideas given by the respondents during the focus group interviews were complementary and the respondents often agreed with each other. Even a detailed analysis could not always distinguish between agreement due to ‘social pressure’ or agreement generated by their similar nursing/care practices.

In the descriptive study (Chapter 5) about the role of HIV nurse consultants in the Netherlands, the data were gathered during the same interviews in which the current strategies to promote adherence were discussed. One nurse consultant from each HIV treatment centre participated. If all HIV nurse consultants had been included, this could have resulted in more data about the description of the care for HIV-infected patients.

Developing interventions using qualitative analysis: the contribution of the van Meijel model

The study procedure was based on the model described by van Meijel et al.[5] in which the development of evidence-based nursing interventions appropriate for strategies in which the experience of the person, plays a central role. This model comprises four stages, starting with problem definition in which the initial exploration strategy of the problem is formulated. In the second stage the building blocks are gathered. This stage includes a number of steps in order to use different sources: findings from the literature, problem analysis, needs analysis and current practice analysis. The third stage the intervention is designed on the basis of the information collected during the previous stage. The fourth stage in the development is the validation of the intervention.

In this thesis we present the stages of defining the problem, the gathering of building blocks (Chapters 2, 3, 4 & 6) and the initial step in designing the intervention (Chapter 7). The stages that follow designing the intervention still have to be implemented.

The model developed and used by van Meijel et al. is broadly consistent with a number of other models that can be used to assist in the process of designing and evaluating interventions, such as Intervention Mapping[6], the Medical Research Council framework (MRC framework)[7] and the model of Bradley et al.[8]. All these models start by defining the problem and exploring the relevant theory and evidence (needs assessment) followed by the phase of defining the components of the intervention.

In all methods, the final phase is the validation and evaluation of the effect of the intervention[6,7]. Intervention mapping also evaluates the intervention process[6,7]. The model developed by van Meijel et al.[5] places strong emphasis on exploring the patient's perspective in considerable depth in order to be able to base the intervention on the understanding of the motives and forces underlying the patient's behaviour.

Completing the phases described in this thesis using the model of van Meijel et al.[5] was a laborious but useful strategy that allowed us to gather the building blocks to develop the approach to enhance and maintain adherence that is grounded in empirical data and based on understanding of the processes leading to the observed behaviour. This qualitative study enabled us to define those key components of the strategies that can be tailored to individual needs and to define the personal experiences (in this case acceptance of being HIV-infected) to which these strategies need to be adapted.

By using this model and by the emphasis on studying the patients' perspective, we were able to identify acceptance as being a crucial factor in adherence to antiretroviral therapy. The use of the model provides insight into the basis of adherence behaviour, substantiates the importance of individualized interventions and legitimizes the development of the approach to optimize adherence of which acceptance is the foundation.

Acceptance of being HIV-infected

Our study has shown that acceptance of being HIV-infected plays a crucial role in adherence behaviour (Chapter 3). Acceptance means that patients recognize that they cannot change or avoid the situation of being HIV-infected and that offering resistance does not help them. HIV-infected patients understand that something has happened to them in the past (for which they may or may not be responsible), that should not have happened. Acceptors recognize that being infected with HIV has irreversible consequences with which they have to deal. As this is how things are, they consider it is now up to them to influence their future as well as they possibly can by behaving in a way that optimizes their health. Taking treatment as they should is one of the major things that they can do in this phase of their illness. Acceptance of being HIV-infected leads to a positive attitude towards taking treatment every day while living a good life and thus leads to high levels of adherence. For non-acceptors a good life is a life that is undisturbed by HIV or its treatment. Adherence is threatened by avoidance of HIV-related stress and the need to control their lives by living them as they want to, notwithstanding HIV.

Cognitive coping and reassuring thoughts, seen particularly in non-acceptors, can impede adherence. For professionals it can lead to difficulties in recognizing non-adherence.

The study further showed that the level of acceptance of being HIV-infected determines the way in which the choice whether or not to disclose one's HIV-positiveness is made (Chapter 4). Furthermore, different disclosure behaviour is seen during each phase of the disease, influenced by the way of coping with HIV and the weight of rational rather than emotional considerations. The level of acceptance defines whether disclosure choices impede adherence or not. Acceptors are more prepared to handle barriers to adherence.

Disclosure behaviour affects factors influencing adherence. Social support influences adherence positively, but arranging adherence support from the surrounding network of people obviously needs openness about the HIV-status.

The risk of unwanted disclosure may impede adherence. If it is not possible to take medication out of sight of others, there is a risk that a dose is will be skipped. Practical aids such as reminders can only be used without limitations when one's HIV-status has been revealed to others.

Acceptance of being HIV-infected is not something readily acquired and can change over time. The experience of being HIV-infected is dynamic and therefore acceptance and non-acceptance can differ from day to day. Changes in acceptance may be caused by experiences that are related to being HIV infected and can be influenced by intrapsychic factors as well as external circumstances. It cannot be predicted if or when a patient's acceptance status will change.

Advancing the acceptance of being HIV-infected is the first and most important goal in promoting adherence. Attention to acceptance of being HIV-infected and its related future adherence starts long before HAART is introduced and needs ongoing attention. In patients who need medication directly after being diagnosed with HIV, the process of coping with HIV and HAART and reaching acceptance of being HIV-infected is complicated. However, the possibility of influencing the patients' experience of being HIV infected is limited. The professional cannot make the patient accept but can only support them in accepting the place of HIV in their lives. Acceptance should not be impeded, particularly not by professionals.

Adherence support should be adapted to the patient's level of acceptance of being HIV-infected. Adherence support for acceptors is aimed at preparing them for the impact of treatment with HAART on life. It mainly consists of practical advice and development of pro-active coping skills in helping to make the right choices in specific situations when obstacles occur. For non-acceptors, besides trying to improve acceptance of the disease in their lives, minimizing the interference of medication with their lives is the first concern. Support is geared at helping them to develop skills to minimize the conflicts between what is demanded by therapy and what is necessary to live a good life as they see it.

Information on factors affecting the processes of adherence indicates the factors to which the adherence-supporting strategies should be addressed. Influencing factors and appropriate strategies from the literature and from current practice by HIV nurse consultants in the Netherlands were studied (Chapter 6). Studying practice was aimed at eliciting practice-based knowledge. The study did not yield major new insights but provided some useful ideas about concrete measures which could be taken to support adherence. Conclusions drawn from the data analysis were confirmed.

Our findings strongly suggest that adherence requires ongoing, long-term support (Chapters 2, 3 & 4). It is a lifelong struggle for HIV-infected patients to remain adherent and to refuse to give in to the temptation to skip a dose, to postpone treatment when it is inconvenient to take it at the right time, and to deal with obstacles to adherence. Also the dynamic character of acceptance makes a long term approach to providing ongoing support in enhancing and maintaining adherence necessary.

The added value of our study in relation to the information already available in published studies in the field of adherence to antiretroviral therapy lies mainly in the explanation and description of the underlying processes of adherence to HAART. The study provides the understanding of the experiences of being adherent and being HIV-infected from the patient's perspective and also gives explanations of why many of the factors found in quantitative studies influence adherence. The findings of our study contribute to health care practice because they help to analyze what might be at play in specific patient situations, and to predict what can be expected in the future. Our study findings support the importance of individualizing adherence-support strategies as we saw important differences between individuals. For tailoring adherence support to the individual, we assume open conversation to be important. The use of standardized questionnaires for a complex and dynamic phenomenon such as adherence may not be appropriate. Therefore, the basic principle of the approach proposed by this study is 'learning to know the patient'. Insight into the processes at play and care provided accordingly, allow the tailoring of interventions to the patient that goes beyond trial and error or reliance on earlier experiences. We assume that both understanding the patient's situation and delivering patient-tailored care necessitates specific competences from the health care provider.

Analysis of the underlying process points to acceptance of the illness playing an important role in adherence; this is also true of patients suffering from other chronic illnesses that require long-term medication or other long-term therapeutic measures. Research - some yet unpublished - seems to confirm this[9-13].

Information from the literature on acceptance of being HIV-infected

Acceptance plays a prominent role in the life of HIV-infected patients, and not only in the first period of being HIV-infected.

Several other studies found that acceptance of an HIV-diagnosis influences adherence to HAART. Four studies that were included in our review of qualitative studies (**Chapter 2**), discussed the theme of acceptance in relation to adherence. According to these studies, difficulties in dealing with the diagnosis and poor acceptance of HIV impedes adherence[14-17]. HAART is found to constitute a severe confrontation to those who do not accept being HIV-positive and the medication 'draws attention to its cause'[14] (p. 1915). In Wilson et al.'s[18] study, acceptance is defined as 'consenting or acceding HIV, leading to the willingness to face whatever HIV takes' (p. 1317). Sankar et al.[16] referred to acceptance as persons who identified themselves with HIV, 'I am HIV' (p. 214). In the systematic review of patient-reported barriers and facilitators of adherence of Mills et al.[19], not one of the 47 quantitative studies included acceptance. Of the 37 qualitative studies included, five studies, including one in children, discussed acceptance as an influencing factor. Our study adds to other qualitative studies, by explaining the process underlying the role of acceptance and non-acceptance.

Further literature searches on acceptance in relation to adherence to HAART provided three recent studies on the theme, two qualitative[20,21] and one quantitative study[22]. In the study of Konkle-Parker et al.[20], as in the studies in our review, is pointed to acceptance of being HIV-infected as a factor influencing adherence. The study of Nam et al.[21] finds acceptance of HIV-status to be the key concept associated with good or excellent adherence. The study about the relationship of acceptance or denial of one's HIV-status to antiretroviral adherence among adult HIV-patients in urban Botswana has led to the development of a theoretical framework[21]. This framework contains the key concepts associated with good and poor adherence patterns. Acceptance and denial are the central themes. In the study of Nam et al.[21] acceptance means that the individual has 'developed a new perception of 'self', accepting this new image of 'self' with the virus' (p. 303). These persons relate positively to their medication and are able to adhere[21]. Konkle-Parker et al.[20] defined acceptance as 'a continuum from simple acceptance to having a positive attitude about the medication and about the benefits of living longer', 'rather than fearing mortality' (p.100, 101). The way we defined acceptance, based on our data, can be said to lie somewhere in between. Both Nam et al.[21] and Konkle-Parker et al.[20] conclude that acceptance leads to the ability to make lifestyle changes that lead to adherence and to thinking about the consequences of not taking treatment. Non-acceptance leads to the opposite. As such, their conclusions are in line with ours (Chapter 3).

In our study we refer to *non-acceptance*, Nam et al.[21] and Konkle-Parker et al.[20] refer to *denial*, although they do not clearly define the concept. We did not use the concept of denial because we did not see respondents who did not admit to being HIV-infected, or who thought that the HIV-infection did not present a threat. However our sample differs from the population in the studies that use the term denial. As the respondents in our study were recruited in treatment centres for HIV-patients those denying their disease are probably not included.

The quantitative study by Ines et al.[22] related respondents' degree of acceptance of HIV (good, average and bad) to either adherence or non-adherence. A good and average degree of acceptance was significantly associated with being adherent. Both adherence and the degree of acceptance were based on self-administered measures.

One qualitative study investigated appointment compliance. Appointment compliance, i.e. showing up for medical care, was influenced by the patient's level of acceptance of having HIV. Patients who expressed a low level of acceptance were erratic in attending for medical care. The reasons given by non-acceptors for staying out of care were in accordance with the reasons for non-adherence in our study: not willing to be reminded of HIV, not wanting to feel sorry for themselves, or having other priorities in life[23].

The fact that acceptance of the disease in relation to medication management or adherence has hardly been studied using qualitative research may be explained by the dynamic character of acceptance as this leads to difficulties in determining its relation to adherence.

Acceptance in cognitive behavioural models

Acceptance of the illness is not addressed in the dominant health behaviour models such as the 'Health Belief Model' (HBM) and Ajzen's 'Theory of Planned Behaviour' (TPB)[24]. In our study analysis, however, it appears to be the strongest influencing factor. Based on our study findings, a patient's determination to be adherent, defined by the level of acceptance (Chapter 3), is most close to the behavioural intention of TPB. In the TPB model it is assumed that behaviour is predicted by the individual's current behavioural intention. Intention is determined by the person's attitudes, subjective norms and perceived behavioural control. Attitude refers to what a person expects from particular behaviour based on evaluations of their own behaviour. Subjective norms are comprised by the perceived attitude, feelings and thoughts of significant others and are influenced by the person's motivation to comply with the expectations of the others. Perceived behavioural control, the content of which is comparable with self-efficacy in the ‘Social Learning Theory’ of Bandura[25], refers to one’s perception of the ability to perform a particular behaviour and is influenced by a person’s beliefs about the opportunities to perform the behaviour[24]. External factors influence the determinants of behavioural intentions and represent demographic variables (age, sex, socioeconomic status etc.) and personality (being open, agreeable, introvert etc.)[24].

Determination to perform a certain behaviour, adherence, is stronger than intention as its basis lies in one’s attitude towards dealing with the illness, rather than a cognitive decision concerning the specific behaviour. Persons determination to be adherent is defined by the level of acceptance (Chapter3) and defines the way patients deal with adherence obstacles: acceptors are determined to perform the behaviour, the obstacles are seen as hurdles. For non-acceptors, whose level of determination to be adherent is low, the obstacles are barriers, leading to not performing the behaviour. Subjective norms, and maybe to a lesser degree, attitude and perceived behaviour control are modulated by acceptance. In non-acceptors we can see attitudes being influenced by behaviour, rather than or in addition to the other way round.

A recently developed and possibly promising model that is being used to influence health behaviour is the ‘Acceptance and Commitment Therapy (ACT)[26]. ACT is referred to as third generation behavioural therapy. The psychology literature shows that there is growing interest in this model[27]. ACT is defined as a psychological intervention in which patients learn to defuse emotions and to adopt an accepting stance towards the distressing experience. ACT makes patients identify their personal values that are used to set behavioural goals and define behaviour change strategies. Committed action means that patients act to reach the behaviour goals, in the context of acceptance[27,28]. The ACT-model has already been applied to the development of interventions within psychological studies from which it has been concluded that it is effective in domains such as cigarette smoking cessation[29] and the management of diabetes[30]. In a pilot study on the effect of an intervention using ACT as framework to promote HIV-medication adherence, no effect of the intervention was seen on the self-rated measure of adherence. It is not clear whether the ineffectiveness of the intervention reported by this study is related to the use of the model or to the way the study was performed, as the study has considerable limitations. The usefulness of ACT as a theoretical framework for the development of an acceptance-promoting intervention which may result in higher adherence to HAART needs to be further examined.

Further research

The role of acceptance as a variable of adherence to antiretroviral therapy needs to be studied further, and it is certainly worthwhile to study it in a broader context of adherence and self-management in chronic illness in general

Attaining acceptance of the place of HIV in one's life is not only important for the success of treatment adherence, but also for the patient's quality of life. The question of what determines acceptance and non-acceptance and how acceptance of the place of HIV in life can be fostered remains. In studying this further, the focus should be on understanding life with the illness.

The processes at play in adherence and underlying patterns also need to be explored in other sub-populations, such as non-indigenous people. HIV is certainly a culturally-loaded theme and cultural beliefs and values play a role. Moreover, environment as well as past experiences may create differences that require different approaches. The extent to which the findings of this study are culturally diverse or apply trans-culturally is of interest and not only theoretically, and further study would certainly enhance practice in supporting these subpopulations.

The defined components of the adherence approach (Chapter 7) need to be elaborated further into guidelines which would allow flexible use of the proposed strategies in order to adapt them to a specific patient. Once developed the approach could be tested in practice by the use of case studies in several diverse groups of patients. Professionals and patients could both be involved in this testing. After processing the comments, the approach could be tested in practice. The use of case studies in diverse situations is a proven method to test a strategy (intervention). The care performers and care receivers are involved in this method[2,5,31]. The definitive adherence approach could be tested in an RCT, to comply with the concept of evidence-based practice. We consider a study in which our approach is compared with another tested intervention that aims for longer term treatment success and standard care. As well as the outcomes of adherence and treatment success (viral load), the feasibility (complexity of use) and the costs of the use of both interventions could be studied. However, whether the procedure to test the intervention would make sense in a field that is developing so rapidly, must be considered.

The change in the role of the HIV nurse consultant to the substitution of care model (Chapter 5) the question of cost-effectiveness and patient satisfaction with substitution of HIV care, care delivered by HNCs that was formerly provided by a physician, arises. Studying the effects of the adjusted role can make an important contribution to these developments.

In summary, studies should investigate:

- How acceptance can be fostered
- What determines acceptance and non-acceptance
- The extent to which the information that was brought to light about HIV also applies to other chronic diseases
- The influence of cultural aspects: adherence in non-indigenous persons
- The effect of the use of the long-term adherence approach based on adherence, in comparison with other tested interventions/standard care
- Cost-effectiveness of HIV nurse consultants in the care for HIV-infected patients in the Netherlands.

References

1. Bodenheimer T, Lorig K, Holman H, Grumbach K: Patient self-management of chronic disease in primary care. *Jama* 2002, 288: 2469-2475.
2. Gamel C, Grypdonck M, Hengeveld M, Davis B: A method to develop a nursing intervention: the contribution of qualitative studies to the process. *J Adv Nurs* 2001, 33: 806-819.
3. Neuman WL: *Social research methods. Qaulitative and quantitative approaches*, sixth edition edn. Pearson International; 2006.
4. Charmaz K: *Constructing Grounded Theory, A Practical Guide Through Qualitative Analysis*. London: SAGE Publications Ltd.; 2006.
5. van Meijel B, Gamel C, van Swieten-Duijfjes B, Grypdonck MH: The development of evidence-based nursing interventions: methodological considerations. *J Adv Nurs* 2004, 48: 84-92.
6. Bartholomew LK, Parcel GS, Kok G: Intervention mapping: a process for developing theory- and evidence-based health education programs. *Health Educ Behav* 1998, 25: 545-563.
7. Blackwood B: Methodological issues in evaluating complex healthcare interventions. *J Adv Nurs* 2006, 54: 612-622.
8. Bradley F, Wiles R, Kinmonth AL, Mant D, Gantley M: Development and evaluation of complex interventions in health services research: case study of the Southampton heart integrated care project (SHIP). The SHIP Collaborative Group. *BMJ* 1999, 318: 711-715.
9. Lachapelle DL, Lavoie S, Boudreau A: The meaning and process of pain acceptance. Perceptions of women living with arthritis and fibromyalgia. *Pain Res Manag* 2008, 13: 201-210.
10. Baiardini I, Braido F, Giardini A, Majani G, Cacciola C, Rogaku A et al.: Adherence to treatment: assessment of an unmet need in asthma. *J Investig Allergol Clin Immunol* 2006, 16: 218-223.
11. Scotto CJ: The lived experience of adherence for patients with heart failure. *J Cardiopulm Rehabil* 2005, 25: 158-163.
12. Zalewska A, Miniszewska J, Chodkiewicz J, Narbutt J: Acceptance of chronic illness in psoriasis vulgaris patients. *J Eur Acad Dermatol Venereol* 2007, 21: 235-242.
13. Banning M: Older people and adherence with medication: a review of the literature. *Int J Nurs Stud* 2008, 45: 1550-1561.
14. Witteveen E, van Ameijden EJ: Drug users and HIV-combination therapy (HAART): factors which impede or facilitate adherence. *Subst Use Misuse* 2002, 37: 1905-25.
15. Hill Z, Kendall C, Fernandez M: Patterns of adherence to antiretrovirals: why adherence has no simple measure. *AIDS Patient Care STDS* 2003, 17: 519-25.
16. Sankar A, Luborsky M, Schuman P, Roberts G: Adherence discourse among African-American women taking HAART. *AIDS Care* 2002, 14: 203-18.
17. Wilson LE, Gallant JE: HIV/AIDS: the management of treatment-experienced HIV-infected patients: new drugs and drug combinations. *Clin Infect Dis* 2009, 48: 214-221.
18. Wilson HS, Hutchinson SA, Holzemer WL: Reconciling incompatibilities: a grounded theory of HIV medication adherence and symptom management. *Qual Health Res* 2002, 12: 1309-22.
19. Mills EJ, Nachega JB, Bangsberg DR, Singh S, Rachlis B, Wu P et al.: Adherence to HAART: a systematic review of developed and developing nation patient-reported barriers and facilitators. *PLoS Med* 2006, 3: e438.
20. Konkle-Parker DJ, Erlen JA, Dubbert PM: Barriers and facilitators to medication adherence in a southern minority population with HIV disease. *J Assoc Nurses AIDS Care* 2008, 19: 98-104.

21. Nam SL, Fielding K, Avalos A, Dickinson D, Gaolathe T, Geissler PW: The relationship of acceptance or denial of HIV-status to antiretroviral adherence among adult HIV patients in urban Botswana. *Soc Sci Med* 2008, 67: 301-310.
22. Ines SM, Moralejo L, Marcos M, Fuertes A, Luna G: Adherence to highly active antiretroviral therapy in HIV-infected inmates. *Curr HIV Res* 2008, 6: 164-170.
23. Rajabiun S, Mallinson RK, McCoy K, Coleman S, Drainoni ML, Rebholz C et al.: "Getting me back on track": the role of outreach interventions in engaging and retaining people living with HIV/AIDS in medical care. *AIDS Patient Care STDS* 2007, 21 Suppl 1: S20-S29.
24. Connor M, Norman P: *Predicting health behaviour: research and practice with social cognitive models*. Buckingham-Philadelphia: Open University Press; 1995.
25. Bandura A: *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs: Prentice-Hall; 1986.
26. Hayes S, Strosahl K, Wilson KG: *Acceptance and commitment therapy: an experiental approacht to behavior change*. New York: 1999.
27. Powers MB, Zum Vorde Sive Vording MB, Emmelkamp PM: Acceptance and commitment therapy: a meta-analytic review. *Psychother Psychosom* 2009, 78: 73-80.
28. Moitra E: *Acceptance-based Intervention to promote HIV Medication Adherence.* Philadelphia: Drexel University; 2009.
29. Gifford EV, Kohlenberg BS, Hayes SC, Antonuccio DO, Piasecki mM, Rasmussen-Hall ML et al.: Acceptance-Based Treatment for Smoking Cessation. *Behavior Therapy* 2004, 35: 705.
30. Gregg JA, Callaghan GM, Hayes SC, Glenn-Lawson JL: Improving diabetes self-management through acceptance, mindfulness, and values: A randomized controlled trial. *Journal of Consulting and Clinical Psychology* 2007, 75: 343.
31. Morse JM, Penrod J, Hupcey JE: Qualitative outcome analysis: evaluating nursing interventions for complex clinical phenomena. *J Nurs Scholarsh* 2000, 32: 125-130.

Chapter 9

Summary

Nederlandse samenvatting

Dankwoord

Curriculum Vitae

The aim of this thesis was to gain deeper insight into the influences of adherence on highly active antiretroviral therapy (HAART), to examine the underlying processes at play and to explore current adherence practice in HIV care in the Netherlands. The knowledge gained was used in the development of a patient-tailored approach to enhancing and maintaining adherence.

In order to construct the framework for an adherence intervention that can be tailored to patients' individual situations, information from the patients' perspective is essential. The literature review in **Chapter 2** examined what is known about factors influencing adherence to HAART from the patients' perspective and attempted to analyse the processes underlying these influencing factors apparent from quantitative studies.

The review first summarizes the findings of reviews of quantitative studies on factors related to or predictive of adherence to antiretroviral therapy. Secondly, the results of qualitative studies on factors known to influence adherence or non-adherence were presented according to the dimensions used by the World Health Organization. The factors were grouped into 'therapy-related', 'condition-related', 'patient-related', 'healthcare team and system-related' and 'socioeconomic-related' factors.

The review of qualitative studies on adherence to antiretroviral therapy confirmed the factors identified in the quantitative studies and to some extent clarified their influence. Most of the reviewed studies, however, neither uncovered underlying processes nor devoted attention to the possible relations between identified themes/factors related to adherence. The majority of these studies often used limited data and/or insufficient methodology.

In spite of the superficiality of most of the studies, the review provides important information about influencing factors and underlying processes that need to be taken into account when developing and using adherence-promoting strategies in HAART.

In **Chapter 3** we describe the results of a qualitative study on adherence to HAART in 30 Dutch and Belgian HIV-infected patients who have been on treatment with HAART between 3 months and 15 years. The aim of this study was to explore and clarify underlying processes which lead to either adherence or non-adherence. We wanted to understand (the differences in) adherence behaviour, to gain insight into the way people manage their daily lives when taking antiretroviral treatment and the interaction thereof with adherence. What makes taking treatment adherently difficult or easy from the patients' point of view?

This study revealed that adherence to antiretroviral treatment is mainly influenced by the acceptance or non-acceptance of being HIV-infected. Actual adherence is the result of two elements: the determination to be adherent and the way patients deal with encountered obstacles. The patient can adopt one of two basic stances: ‘‘Being determined to be adherent’’ (life requires adequate HAART) or ‘‘medication is subordinate to other priorities in life’’ (HAART should not take precedence over life). The basic stance determines the way patients deal with temporary obstacles and other influencing factors and influences the actual level of adherence. Which basic stance is adopted is based on acceptance of being HIV positive. Patients are either ‘‘prepared to acknowledge the influence of HIV on one’s life’’ (hereafter we refer to them as acceptors) or ‘‘not prepared to let HIV influence their life’’ (hereafter the non-acceptors). Acceptance implies that the patient can face the threat of HIV and can give priority to the exigencies of therapy. Non-acceptance implies that patients cannot face the threat that HIV entails for their life and lifestyle. They want to live their life undisturbed by HIV. Hence, instances in which activities would have to be given up for HAART threaten adherence.

The results of this study make clear that an adherence approach needs to be adjusted to patients’ personal circumstances rather than using the same procedure for all patients. Whether a patient accepts HIV should be examined before medication is started.

Furthermore, we have seen that self-report of adherence seems unreliable because patients sometimes judge themselves to be adherent by their own standards that may differ considerably from the correct regimen. These misconceptions seem to be based on cognitive dissonance as knowledge about adherence is adapted to one’s own behaviour. To understand a patient’s adherence behaviour, the patient should be asked to describe his/her exact pill-taking behaviour.

We provide an overview of the differences identified in influencing factors related to acceptance and non-acceptance.

Chapter 4 presents a study on the role of disclosure and nondisclosure in people taking antiretroviral therapy and its influence on adherence in 44 HIV-infected patients from the Netherlands and Belgium. Forty-four in-depth interviews were held. This study shows that disclosure is a central theme for all HIV-infected patients. Although most respondents think that openness is to be preferred in principle, other needs may play an important role. Disclosure and non disclosure are not always a rational choice and is sometimes a reaction to an emotional need. Patients in our study do not have only one disclosure status. Per phase of being HIV infected, different disclosure patterns are seen. Per phase other considerations are at play, mainly influenced by acceptance or non-acceptance of being HIV-positive. The number of persons and the relation to persons to whom they disclose differs. In our study all patients disclosed to at least one person. Whether HIV is disclosed to others is influenced by patients' personal manner of coping with HIV and the degree of acceptance of HIV. Moreover, patients' disclosure choices are not static, but an ongoing issue, influenced by their state of acceptance that can change over time and patients' experience with revealing their HIV-status to others. We found that recently infected patients are less open about their HIV: they are more concerned about 'the image of HIV in society', 'their own role in becoming HIV-infected' and 'the question of guilt'.

Furthermore, the present study reveals details about different disclosure patterns and their relation to adherence. Four patterns can be distinguished: 1) '*others know about HIV and being fully open', 2)* '*others know about HIV and being open to a limited extent'*, 3) *'others do not know about HIV but another reason is given for taking medication'* and 4) *'others do not know about HIV and respondents are determined not to disclose'.*

Chapter 5 described the results of a descriptive study concerning the role of HIV nurses in the care of HIV-infected patients in the Netherlands. The study provides insight into the organisation of the care of Dutch HIV-infected patients. All known HIV-infected patients in the Netherlands are cared for in one of the designated AIDS-treatment centres. Seventy-one nurse consultants work in the 24 HIV treatment centres. HIV-infected patients are cared for by physicians and HIV-nurse consultants together and are continuously followed in the outpatient clinics. Continuity of care is guaranteed and all patients have their own physician and HIV nurse specialist/consultant.

The study revealed that in recent years a change has taken place in the division of responsibility between physicians and HIV nurse consultants. This change is referred to as substitution of care. Fifty-eight percent of the treatment centres utilize the principle of substitution of care, meaning that consultations are carried out on an alternating basis; patients are seen in turn by either an HIV nurse consultant or a physician. We report differences between centres practicing substitution of care and those which are not.

Most HIV nurse consultants are satisfied with their job. They are acquainted with the Dutch HIV treatment guidelines, but their detailed knowledge of the adherence issues in the guideline is limited: fourteen (58.3%) respondents had read the adherence chapter.

Nurses especially have the opportunity to offer aid to patients who have to live with this disease, providing information and supporting patients in handling the consequences of their illness in daily life, self-management of their illness and adherence. HIV nurse consultants have more time for consultations than physicians and can plan consults tailored to patients' needs. HIV nurse consultants are also easily accessible.

Chapter 6 describes the results of an explorative study into the existing adherence support strategies as used by HIV nurse consultants in the Netherlands. The study used two methods for data-gathering: individual interviews and focus group interviews. In the latter patients' cases were used to trigger the discussion. In the individual interviews the respondents were asked to describe what they actually do when they deliver adherence care. In total 23 individual and three focus group interviews were held within total 19 nurses. HIV nurse consultants in particular are conscious of the harshness of HIV and its treatment. They show compassion and are dedicated to giving their patients the best possible care, emphasising that patients take their own decisions. They see their role as permanently supporting patients who are having difficulty dealing with HIV and with being adherent. The strategies used and the rationale on which the strategies are based are presented according to the main categories of adherence-influencing factors.

We found that the used strategies are mainly based on experiential knowledge and are to a large extent in accordance with the literature. The study provides insight into adjustments that can be made to improve delivered care.

Chapter 7 discusses the building blocks needed to promote enhancement and maintenance of adherence to antiretroviral therapy, based on our study findings. Our study data (chapters 3 & 4) and analysis of literature (chapter 2) suggested the need for ongoing attention to adherence. The concept that emerged is a long-term programme for HIV-infected patients. Remaining adherent is a lifelong struggle: refusing to give into the temptation to skip a dose, postponing treatment when it is inconvenient to take it at the right time and dealing with obstacles that present themselves.

The described approach is designed to be tailored to the individual patient in his/her specific circumstances, unique illness experiences and related needs and aims at contributing to the self-management of the patient. In line with our study findings, the approach differentiates between acceptors and non-acceptors.

The themes that need attention are described for three phases - the phase between the diagnosis and the need to start treatment, the phase of preparation to take HAART, and the phase on treatment and is based on our findings and those of other studies and thus are founded on theoretical considerations. The relevant building blocks are presented for each theme for the support professionals can and should provide. Acceptors mainly need support in preparing for the impact treatment with HAART will have on their lifestyle. Support consists of practical advice as to how to behave in specific situations when obstacles occur. For non acceptors, if medically possible, the preparatory phase should focus on acceptance of the disease. If waiting is not an option or HIV remains unaccepted, the emphasis lies on minimizing the interference of medication, and thus HIV, on daily life. Patients may get help developing skills to minimize the conflicts and reach a higher level of adherence. The approach needs to be further elaborated into a guideline which can be used by nurses to give adherence support in daily practice and tested for its validity.

Finally in **Chapter 8** we discuss the results and the methodology employed in the studies that form the basis of this thesis.

Chapter 9

Summary
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Sinds de introductie van de combinatietherapie voor de behandeling van HIV in 1996 is de levensverwachting van mensen die geïnfecteerd zijn met HIV enorm toegenomen en wordt steeds meer over HIV gesproken als een chronische ziekte. Na de komst van de combinatietherapie zijn de ontwikkelingen doorgegaan. Daar waar in het begin gestart werd met veel pillen die twee tot drie keer per dag ingenomen moesten worden, met ingewikkelde regels van wel of niet eten, start men tegenwoordig met simpelere medicatieschema's, bestaande uit weinig pillen, vaak een keer per dag, die beter te verdragen zijn.

Voor het succes van de behandeling is echter nog steeds een hoge mate van therapietrouw noodzakelijk (meer dan 95%). Bij een te lage mate van therapietrouw kan resistentie ontstaan voor het gebruikte middel. HIV is niet meer gevoelig voor het medicijn en omdat er ook sprake is van kruisresistentie zijn de behandelmogelijkheden beperkter. Daarnaast is ook de overdracht van resistente virussen naar andere personen een risico. Wanneer er sprake is van resistentie, betekent het dat er een behandeling gegeven moet worden met ingewikkeldere innamenschema's, bestaande uit meer pillen die meestal meerdere keren op een dag ingenomen moeten worden.

Ondanks alle ontwikkelingen en betere medicijnen worden veel mensen die geïnfecteerd zijn met HIV en behandeld worden met de combinatietherapie geconfronteerd met, soms ernstige, bijwerkingen en andere HIV gerelateerde chronische aandoeningen, zoals verhoogde bloeddruk en verhoogd cholesterol, waarvoor ook medicatie voorgeschreven wordt. Bijwerkingen zijn van invloed op de kwaliteit van leven en kunnen een reden zijn voor minder trouwe inname van de medicatie.

Therapietrouw als belangrijke factor voor het welslagen van de behandeling is een centraal thema in de zorg aan personen die geïnfecteerd zijn met HIV. Om HIV-geïnfecteerde personen goed te begeleiden is meer inzicht nodig vanuit het perspectief van deze personen zelf. Het doel van dit proefschrift is dan ook om kennis te verkrijgen over de invloeden op therapietrouw en over wat onderliggende redenen zijn van therapietrouw en therapieontrouw bij de behandeling met de combinatietherapie. Deze kennis is gebruikt bij de ontwikkeling van een strategie ter ondersteuning van therapietrouw van HIV-geïnfecteerde personen die behandeld worden met combinatietherapie (hoofdstuk 7). Om de zorg af te stemmen op het individu is informatie vanuit het perspectief van het individu essentieel.

De literatuurstudie, beschreven in **Hoofdstuk 2,** geeft weer wat er bekend is van factoren die van invloed zijn op therapietrouw bij de behandeling met de combinatietherapie vanuit het perspectief van de patiënt. Hierbij werd ook gekeken naar wat er bekend is van mogelijke onderliggende processen die daarbij een rol spelen. In dit hoofdstuk wordt een kort overzicht gegeven van bevindingen uit studies die de relatie onderzochten van beïnvloedende factoren op therapietrouw bij het gebruik van HIV-remmers (kwantitatief onderzoek). Daarnaast worden de resultaten van kwalitatief onderzoek naar factoren die therapietrouw aan HIV-remmers beïnvloeden uitgebreid beschreven.

Zowel de kwantitatieve als de kwalitatieve onderzoeken laten bij therapie-gerelateerde factoren zien dat veel patiënten bijwerkingen ervaren en dat deze bijwerkingen een belangrijke reden zijn voor therapieontrouw. De gedachte dat de medicatie ziekmakend is, kan een reden zijn voor therapieontrouw. Patiënten ervaren de medicatie als veeleisend door de strikte regels en de complexiteit van het regime. Innamenfrequentie, veranderingen in het voorschrift, het aantal pillen, de grootte en de smaak hebben een negatieve invloed op therapietrouw. HIV-geïnfecteerd zijn' en het chronische karakter er van. Patiënten maken zich zorgen over de toxiciteit van de middelen die zij slikken. Dit kan leiden tot ambivalentie ten opzichte van de medicatie door de paradox dat medicatie levensverlengend en tegelijkertijd toxisch is. Ambivalentie kan leiden tot therapieontrouw. Emotionele stress die samenhangt met de HIV diagnose en de negatieve aspecten van de behandeling kan therapietrouw negatief beïnvloeden. Om de confrontatie met HIV te vermijden wordt medicatie wel eens overgeslagen. Acceptatie van HIV beïnvloedt therapietrouw in positieve zin. Geheimhouding van HIV komt onder druk te staan wanneer met de behandeling is gestart. Patiënten die open zijn over hun HIV status hebben een hogere mate van therapietrouw. Hoewel openheid therapietrouw ook kan tegenwerken wanneer iemand in de omgeving uit geen vertrouwen in of negatieve verwachtingen te hebben over de medicatie.

Patiëntgerelateerde factoren die van invloed zijn, zijn de motivatie om therapietrouw te zijn, kennis over de behandeling en therapietrouw, vergeten, psychisch welbevinden en alcohol/drug gebruik. Motivatie is gebaseerd op het vertrouwen in de behandeling. Zichtbaar resultaat ondersteunt het volhouden van therapietrouw. De eigen kennis over HAART en over het belang van therapietrouw is van invloed op therapietrouw. Verder blijkt dat therapietrouwgedrag vaak gebaseerd is op de persoonlijke interpretatie van wat goede therapietrouw is. Misvattingen kunnen er toe leiden dat men denkt dat de medicatie correct wordt ingenomen, terwijl dit niet volgens de juiste instructies wordt gedaan. Sommige patiënten vergeten gewoon medicatie in te nemen. Als belangrijkste reden wordt verstoring van de dagelijkse routine genoemd. Psychisch welbevinden, niet gerelateerd aan HIV, beïnvloedt therapietrouw. Daarnaast zijn gebruik van alcohol en drugs van invloed op therapietrouw. Wanneer het dagelijkse 'scoren' het leven beheerst, kan dat tot therapieontrouw leiden.

Van factoren die samenhangen met de zorgverlener en gezondheidszorgsysteem lijken het vertrouwen hebben in de zorgverlener en het ervaren van een goede relatie, therapietrouw positief te beïnvloeden. Kenmerken van een ondersteunende zorgverlener zijn een zorgzame houding, meelevend, toegankelijk en respectvol zijn.

In de geselecteerde onderzoeken wordt weinig gezegd over economische factoren en de invloed hiervan op therapietrouw. Slechts één onderzoek noemt de invloed van armoede op therapietrouw. In twee onderzoeken wordt de negatieve invloed van dakloos zijn op therapietrouw beschreven. Sociale ondersteuning van familieleden en vrienden speelt een belangrijke rol in therapietrouw. Deze is vooral van invloed als het substantieel en praktisch is, zoals helpen herinneren en het daadwerkelijk geven van de medicijnen. Een partner die medicatie op een ander tijdstip neemt of inname ontmoedigt, kan echter juist leiden tot problemen met therapietrouw.

De beïnvloedende factoren uit de kwalitatieve studies komen overeen met wat in kwantitatieve studies is gevonden. Er is echter weinig beschreven over onderliggende redenen waarom de factoren van invloed zijn. De gevonden resultaten zijn vertaald in adviezen voor hulpverleners in de HIV zorg.

In **Hoofdstuk 3** worden de resultaten beschreven van een kwalitatief onderzoek over therapietrouw aan de combinatietherapie waaraan 30 Belgische en Nederlandse HIV-geïnfecteerde personen hebben deelgenomen. Het doel van deze studie was het onderzoeken en verhelderen van processen die leiden tot therapie(on)trouw. We wilden begrijpen hoe mensen hun dagelijks leven invullen wanneer zij de HIV medicatie moeten nemen en hoe dit van invloed is op therapietrouw. We wilden weten wat therapietrouw zijn moeilijk of juist makkelijk maakt vanuit het perspectief van de HIV-geïnfecteerde persoon zelf.

De studie maakte duidelijk dat therapietrouw bepaald wordt door iemands basishouding en het resultaat is van iemands 'vastberadenheid om therapietrouw te zijn' en de manier waarop de persoon omgaat met therapietrouw obstakels en barrières. Er zijn twee basishoudingen die een persoon met HIV kan aannemen, namelijk 'vastberaden zijn om therapietrouw te zijn; het leven vraagt/eist goede therapietrouw' of 'medicatie is ondergeschikt aan andere prioriteiten in het leven; de medicatie mag geen voorrang hebben op het leven'. Deze houding bepaalt hoe er met obstakels en barrières van therapietrouw wordt omgegaan en bepaalt daarmee de mate van therapietrouw. Welke basishouding wordt aangenomen wordt voornamelijk beïnvloed door de acceptatie van HIV geïnfecteerd zijn. Acceptatie houdt in dat de persoon de bedreiging van HIV aan kan. Hij/zij kan daarmee prioriteit geven aan de eisen van de behandeling en erkent de invloed die HIV heeft op het leven. Non-acceptatie betekent dat de persoon de bedreiging van HIV op het leven en levensstijl niet aan kan, zij zijn niet voorbereid op de invloed van HIV op het leven. Zij willen het leven leiden zonder dat HIV dat verstoort. Dit leidt er toe dat zij bepaalde activiteiten niet zullen opgeven waarmee er een risico kan ontstaan voor therapieontrouw.

De resultaten van deze studie hebben duidelijk gemaakt dat het nodig is dat een therapietrouwinterventie aangepast kan worden aan de persoonlijk omstandigheden van de patiënt. De beleving van geïnfecteerd zijn is dynamisch en dus kan de acceptatie en non-acceptatie van HIV in het leven veranderen. Veranderingen kunnen veroorzaakt zijn bij ervaringen die gerelateerd zijn aan HIV. Of een patiënt (de rol van) HIV in het leven heeft geaccepteerd zal steeds bekeken moeten worden.

Verder hebben we gezien dat iemands beeld van de eigen mate van therapietrouw niet altijd betrouwbaar is. Sommige personen vinden zichzelf onterecht therapietrouw omdat zij dit beoordelen op grond van wat zij zelf denken dat nodig is om therapietrouw te zijn, terwijl dit afwijkt van de maatregelen die ze zouden moeten nemen. Om goed inzicht te krijgen in de mate van therapietrouw is het nodig naar een beschrijving van het exacte gedrag te vragen en niet naar een beoordeling van hun therapietrouw.

Hoofdstuk 4 behandelt een studie over de rol van het onthullen en niet onthullen van iemands HIV status en welke invloed geheimhouding en openheid van HIV hebben op therapietrouw zijn. Aan deze studie deden 44 HIV-geïnfecteerde patiënten uit België en Nederland mee die behandeld werden met de combinatietherapie. Er werden 44 interviews geanalyseerd.

Dit onderzoek heeft laten zien dat geheimhouding een centraal thema is voor alle deelnemers. Hoewel we zagen dat de meeste deelnemers vonden dat openheid het beste is, spelen andere behoeften en afwegingen een sterkere rol; er wordt bijvoorbeeld sterk rekening gehouden met de mogelijke sociale gevolgen van het onthullen van de HIV status. De deelnemers in onze studie hebben niet een enkele status van of volledig open zijn of volledig geheimhouden. Zij maken verschillende keuzes naar wie ze wel open zijn en naar wie niet. Het aantal personen en de relatie met de personen aan wie HIV wordt onthuld, verschilt. In onze studie had iedereen tenminste aan één persoon verteld HIV geïnfecteerd te zijn.

Daarnaast zagen we verschillende patronen van open zijn in verschillende fases van HIV-geïnfecteerd zijn. Of HIV onthuld wordt aan anderen wordt beïnvloed door de manier van coping met HIV en de mate van acceptatie van HIV-geïnfecteerd zijn. Per fase spelen andere overwegingen een rol. De keuze er open over te zijn of het geheim te houden zijn niet definitief en kunnen veranderen in de tijd omdat de acceptatie van HIV-geïnfecteerd zijn ook kan veranderen. Eerdere ervaring met het onthullen van de HIV status zijn daarop van invloed.

We vonden dat deelnemers die kort weten HIV-geïnfecteerd te zijn minder open zijn over hun HIV status. Zij zijn meer bezig met het imago van HIV in de samenleving en de eigen rol in het HIV-geïnfecteerd raken.

Verder heeft deze studie een aantal details aan het licht gebracht over de relatie tussen geheimhouding of openheid en therapietrouw. We vonden vier verschillende patronen: 1) anderen weten het, volledig open zijn over HIV, 2) anderen weten het, beperkte openheid over HIV, 3) anderen weten het niet, maar een andere reden is gegeven waarom medicatie ingenomen moet worden en 4) anderen weten het niet en vastberaden zijn HIV nooit aan anderen te onthullen.

In **Hoofdstuk 5** wordt het onderzoek naar de rol van verpleegkundig consulenten HIV in de HIV zorg in Nederland beschreven. De studie geeft inzicht in de organisatie van de zorg aan personen met HIV in Nederland. Iedereen die bekend is met HIV wordt verwezen naar een van de AIDS behandelcentra. Eenenzeventig verpleegkundig consulenten HIV zijn werkzaam in 24 behandelcentra. HIV patiënten zijn zowel in zorg bij de internist-infectioloog, al dan niet in opleiding, als bij een verpleegkundig consulent HIV. Continuïteit van zorg is gegarandeerd omdat iedereen zijn eigen arts en verpleegkundig consulent HIV heeft.

De studie laat zien dat in de laatste jaren een verandering heeft plaatsgevonden in de verdeling van taken tussen artsen en verpleegkundigen. Er heeft een verschuiving plaatsgevonden waarbij bepaalde consulten door verpleegkundigen gedaan worden die vroeger door een arts werden gedaan. Dit wordt substitutie van zorg genoemd. In 58% van de HIV/AIDS behandelcentra wordt het principe van substitutie van zorg toegepast. Dit betekent dat de zorg alternerend (afwisselend) wordt aangeboden waarbij de patiënt de ene keer door de arts en de volgende keer door de verpleegkundige wordt gezien. Dit geldt alleen voor patiënten in een stabiele toestand.

Verder zijn de meeste verpleegkundig consulenten HIV tevreden over hun werk. Zij zijn bekend met het bestaan van de Nederlandse behandelrichtlijn, maar blijken beperkt de inhoud van het therapietrouwhoofdstuk te kennen.

Verpleegkundig consulten HIV ondersteunen mensen met HIV in hoe te leven met HIV, geven informatie en voorlichting en ondersteunen hen bij de consequenties die HIV heeft voor het leven, zelfmanagement en therapietrouw. Zij hebben meer tijd in vergelijking met de arts om deze zorg te kunnen leveren.

Hoofdstuk 6 beschrijft de resultaten van een studie naar de bestaande therapietrouwstrategieën die toegepast worden door de verpleegkundig consulenten HIV in Nederland. De studie maakte gebruik van twee dataverzamelingsmethoden, namelijk individuele interviews en focusgroepinterviews. In de focusgroepinterviews werden patiëntencasuïstiek gebruikt om de discussie op te starten. In de individuele interviews werd de respondenten gevraagd te beschrijven wat zij precies doen wanneer ze patiënten begeleiden om therapietrouw te zijn.

In totaal werden er 23 individuele en drie focusgroepinterviews gehouden. In de focusgroepinterviews participeerde in totaal 19 verpleegkundigen.

HIV verpleegkundig consulenten zijn bijzonder betrokken bij patiënten met HIV en zijn zich zeer bewust wat het betekent HIV positief te zijn en medicatie nodig te hebben. Zij laten compassie zien en zijn zeer toegewijd om hun patiënten zo goed mogelijke zorg te geven, waarbij ze benadrukken dat patiënten zelf hun beslissingen nemen. Zij zien hun rol als het constant begeleiden van patiënten met HIV die moeite hebben met de rol van HIV in hun leven en problemen ervaren met therapietrouw zijn.

In het hoofdstuk wordt een overzicht gegeven van de toegepaste strategieën ingedeeld in hoofdcategorieën van beïnvloeden factoren van therapietrouw. Toegepaste strategieën lijken voornamelijk gebaseerd te zijn op ervaring en ervaringskennis en blijken in grote mate overeen te komen met de literatuur. Wel blijkt er nog ruimte te zijn om de therapietrouwzorg te verbeteren.

Hoofdstuk 7 is gewijd aan een beschrijving van bouwstenen voor een interventie ter verbetering en behoud van therapietrouw, gebaseerd op de studiebevindingen uit het onderzoek van dit proefschrift en andere onderzoeksbevindingen

Uit ons onderzoek en uit onderzoeksliteratuur blijkt de noodzaak voor aanhoudende aandacht voor therapietrouw. Therapietrouw blijven is een levenslange uitdaging. De patiënt moet de verleiding weerstaan om een dosis over te slaan of een inname lang uit te stellen als het moment dat de pillen genomen moeten worden slecht uitkomt en hij/zij moet ook telkens adequaat om gaan met barrières die zich voordoen.

De beschreven therapietrouwbenadering is ontworpen om de zorg aan te passen aan de individuele patiënt en zijn/haar specifieke omstandigheden en unieke ziektebeleving en heeft tot doel bij te dragen aan het zelfmanagement van de patiënt. In lijn met onze studiebevindingen wordt in deze benadering een onderscheid gemaakt tussen personen die HIV in hun leven accepteren en diegene die HIV niet accepteren.

We beschrijven de thema's aan de hand van drie fases en wel de fase van diagnose tot behandelingsadvies, de fase van voorbereiding op de behandeling en de fase gedurende de behandeling. Voor ieder thema zijn de relevante bouwstenen beschreven waarin vermeld wordt wat welke ondersteuning de professional kan of zou moeten geven om goede therapietrouw te bevorderen. Patiënten die HIV accepteren hebben voornamelijk ondersteuning nodig wat betreft de impact die de behandeling met combinatietherapie heeft op hun leven. Deze ondersteuning bestaat voornamelijk uit praktische adviezen hoe om te gaan met situaties die de therapietrouw kunnen beïnvloeden. Voor hen die HIV niet accepteren zou de voorbereidingsfase op de behandeling zich voornamelijk moeten richten op het accepteren van de ziekte, indien het medisch mogelijk is de behandeling nog even uit te stellen. Wanneer wachten geen optie is het nodig om de ondersteuning te richten op hoe de verstoring van medicatie op het dagelijks leven zo beperkt mogelijk gemaakt kan worden. Men kan ook trachten de probleemgerichte coping van de patiënt te verbeteren om conflicten tussen behandeling en het leven beperken. Ook dat zou een bijdrage kunnen leveren aan betere therapietrouw.

De beschreven benadering moet nog verder uitgewerkt worden tot een richtlijn die in de verpleegkundige zorg ten behoeve van therapietrouwondersteuning gebruikt kan worden en dient ook getest te worden in een onderzoek.

In **Hoofdstuk 8** worden de resultaten van het onderzoek en de gebruikte onderzoeksmethoden bediscussieerd en staan adviezen genoemd voor verder onderzoek.

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Hier wil ik allen bedanken die dit proefschrift mede mogelijk gemaakt hebben.

Allereerst bedank ik hen die participeerden in mijn studie.
De patiënten die geïnterviewd werden. Ik ben ze zeer erkentelijk voor het vertellen van hun verhaal. Ik heb veel van ze geleerd over het leven met HIV.

Mijn collegae verpleegkundig consulenten HIV in Nederland voor hun deelname in het onderzoek. Dank voor de openhartigheid en het met me willen delen van jullie werkwijzen en ideeën. Mijn waardering is groot.

Dan dank ik mijn promotoren prof. dr. I.M. Hoepelman, prof. dr. J.C.C. Borleffs en prof. dr. M.H.F. Grypdonck voor het begeleiden en ondersteunen van het promotietraject.

Andy, dank voor de mogelijkheid en het vertrouwen dit proefschrift tot een goed einde te brengen. Je adviezen en ideeën zijn steeds zeer aanvullend geweest en zorgde voor een kritische reflectie op de onderzoeksweg. Dank voor je steun tijdens de stressvolle eindsprint.

Jan, dank voor je betrokkenheid, bijdrage en deskundigheid in het onderzoek en je steeds snelle en heldere reacties en ideeën. Onze 2-wekelijkse afspraken en latere e-mail contact (omdat er niets boven Groningen gaat) zorgden er voor dat ik ook tempo heb kunnen maken.

Mieke, dank voor je intensieve en deskundige begeleiding in het doen van kwalitatief onderzoek. Het samen analyseren van de data en bespreken van de inhoud leverde mij steeds weer energie op om door te gaan. Jouw visie, brede kennis, altijd creatieve en nieuwe ideeën zijn zeer waardevol geweest in dit traject.

Een woord van dank voor de leden van leescommissie: Prof. dr. M. Schuurmans (voorzitter), prof. dr. K. Brinkman, prof. dr. J. Bensing, prof. dr. M. Duijnstee en dr. F. van Zuuren. Veel dank voor het beoordelen van het manuscript.

Dank aan Annelies de Grauwe, Esther van Oers-Hazelzet, Bert Fledderus en Maaike Leers, allen studenten verplegingswetenschap Gent/Utrecht, voor het doen van hun afstudeeronderzoek binnen mijn onderzoekstraject. Resultaten van jullie werk zijn een belangrijk onderdeel van dit proefschrift. Ik heb het een bijzondere ervaring gevonden jullie te begeleiden en vooral gezamenlijk onderzoek te doen. Mieke, Claudia en Truus dank voor de samenwerking in dezen.

Boukje Dijkstra bedank ik voor het jaar dat ze mij ondersteunde bij het onderzoek. Je hebt hard gewerkt en hebt laten zien dat je een zeer kritisch en kundig onderzoeker bent. Ik ben benieuwd hoe je verdere onderzoekspad er uit gaat zien.

Bregtje, Regien en Mandy bedank ik voor het typewerk. Een interview dat meestal langer duurde dan 60 minuten letterlijk uittypen, is een enorme klus. Ik ben zeer blij dat ik het niet allemaal zelf heb moeten doen.

Andrea Gasten en Daphne Lees dank ik voor het corrigeren van het Engels. Geregeld onder enorme tijdsdruk, jullie hebben keihard gewerkt. Dank aan Roy Sanders voor de lay-out van dit boekje.

Voor de ruimte die ik kreeg voor het doen van onderzoek ben ik zeer veel dank verschuldigd aan Jan Peters, Andy Hoepelman en Bert Fledderus. Dank voor de mogelijkheid en in de jaren steeds betere randvoorwaarden voor het doen van onderzoek.

Verder dank ik mijn collegae verpleegkundig consulenten en internist-infectiologen voor hun support en voor het informeren van patiënten over mijn onderzoek. Mijn directe collegae dank ik voor alle keren dat ze mij hebben waargenomen wanneer ik op onderzoekspad was; Bob Krijnen, Marieke Zuidema, Joke Patist, Bert Fledderus, Esther van Oers-Hazelzet, Danielle van Elst, MANP-leerling Aafke Bosma en Peter Orsel. Dank.

Iedereen van het polikliniek secretariaat infectieziekten dank ik voor het regelen van de patiëntenzorg in tijden waarin onderzoek een belangrijk deel van mijn werk was om daarmee niemand te kort te doen. We hebben wat afgemaild.

Harmieke, Petra en Berna, dank jullie wel voor de onderzoeksintervisie. Heel wat onderzoeksfacetten zijn gepasseerd, zowel inhoudelijk als over de hobbels en kuilen in de weg der verpleegkundig promovenda. Het was zeer leerzaam. Berna, dank voor het zo dicht bij meemaken van jouw promotie en het horen van jouw ervaringen en keuzes. Je kunt er zeer geanimeerd over vertellen. Ook dank voor je praktische tips.

Ladies van Kalmthout: Sofie, Ann, Mieke Corine, Marian, Els en Marijke. Ik dank jullie dat ik mee mag werken aan de Belgisch-Nederlandse co-productie. Ik heb er veel van geleerd.

Marijke dank ik voor haar ‘partner-in-crime-schap’. Het is steeds verrijkend ervaringen met je te delen in het doen van kwalitatief onderzoek en over onze overeenkomstige belevenissen op het front van het ouderschap. Dankjewel.

Dank aan mijn paranimfen Karin en Joke voor hun support en zeer praktische ondersteuning.

Lieve trouwe vrienden, de tijd voor contact is schaars in ieders volle levens. Nu dit klaar is ga ik er voor de frequentie weer op een hoger niveau te brengen.

Lieve familie Vervoort en Visser en iedereen met een andere achternaam die daar deel van uitmaakt, dank voor jullie steun en interesse in mijn promoveerschap. Veel dank voor het inspringen en opvangen van Jorn en Jelle door de jaren heen zodat ik tijd vrij kon maken voor het doen van onderzoek.

Jan en Greet, lieve ouders, na 19 november hoeven jullie op dit stuk van mijn leven niet meer mee te stressen. Wat een opluchting zal dat zijn. Heel veel dank voor jullie onafgebroken betrokkenheid, steun en bossen bloemen.

Ten slotte dank ik mijn drie mannen voor hun onvoorwaardelijke steun, liefde en de broodnodige afleiding. Lieve Martijn, Jorn en Jelle. Klaar is het! Tijd voor veel meer Blauwe Maan, Beverbende, vissen, wandelen, fietsen en het verzamelen van van alles en nog wat. Kortom, het samen ontdekken van de wereld.
Het leven met jullie is te mooi om eindeloos op zolder te zitten.

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Sigrid Vervoort werd op 2 augustus 1967 geboren in Wilrijk (België). In 1973 verhuisde zij naar Nederland en volgde haar lagere en middelbare schoolopleiding aan de Vrije School in Zeist. In 1987 startte zij de HBO-Verpleegkunde in Zwolle aan de Academie voor Gezondheidszorg, later IJselland Hogeschool te Deventer, die in 1991 werd voltooid. Na een klein jaar als verpleegkundige gewerkt te hebben in het Academisch Ziekenhuis Utrecht (afdeling neurologie), ging zij in 1992 voltijds Gezondheidswetenschappen studeren aan de universiteit van Maastricht, afstudeerrichting Verplegingswetenschap en voltooide deze studie in januari 1995. Zij deed daarna onderzoekservaring op bij de divisie Heelkunde en het Juliuscentrum van het Universitair Medisch Centrum Utrecht.

In augustus 1998 maakte zij de overstap naar de functie van verpleegkundig specialist HIV/AIDS van het Universitair Medisch Centrum Utrecht en is werkzaam binnen de afdeling Interne Geneeskunde en Infectieziekten. Binnen deze functie startte zij het onderzoek dat resulteerde in dit proefschrift. Tijdens dit onderzoek begeleidde zij vijf studenten verplegingswetenschap die afstudeerden op onderwerpen gekoppeld aan haar onderzoeksthema.

Tijdens haar functie als verpleegkundig specialist HIV/AIDS participeerde Sigrid Vervoort in het bestuur van de beroepsvereniging van Verpleegkundig Consulenten HIV/AIDS, Fractie 7 ’onderzoek en advisering’ van de Algemene Vereniging van Verpleegkundigen en Verzorgenden (AVVV) en was lid van de werkgroep en kerngroep van de richtlijn Antiretrovirale behandeling van de Nederlandse Vereniging van AIDS behandelaren/CBO. Zij gaf vanuit haar functie verschillende lessen en presentaties over HIV/AIDS en onderzoeksgerelateerde onderwerpen.