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What do we know about older adults and HIV? a review of social and behavioral literature

Andrea Sankar^a, Andrea Nevedal^{a,*}, Stewart Neufeld^b, Rico Berry^c, and Mark Luborsky^{a,b}

^aDepartment of Anthropology, Wayne State University, Detroit, MI, USA

^bInstitute of Gerontology, Wayne State University, Detroit, MI, USA

^cSchool of Medicine, Wayne State University, Detroit, MI, USA

Abstract

The fastest growing segment of the United States HIV population is people aged 50 and older. This heterogeneous group includes people with diverse pathways into HIV positive status in later life, including aging with the disease as well as later life-acquired infections. As people with HIV live into older ages, solving problems of successful secondary prevention and ongoing treatment requires more specific knowledge of the particular aging-related contextual sociocultural, psychosocial, and personal factors salient to the situations of persons living with HIV. Greater knowledge of these factors will help solve challenges to reducing psychological burden and promoting health maintenance for people with HIV. Yet, the current literature on aging and HIV remains nascent. To assess the state of knowledge of the sociocultural and behavioral factors associated with aging with HIV, we conducted a systematic critical content review of peer-reviewed social and behavioral research on aging and HIV to answer the question, “How have older age, and social, cultural, and behavioral aspects of the intersection of HIV and age been addressed in the literature?” We searched *First Search*, *Proquest*, *Psych Info*, *Pub Med*, *Wilson Select Plus*, and *World Cat* and identified 1549 articles. We then reviewed these to select peer-reviewed articles reporting results of research on the social and behavioral aspects of living with HIV at age 50 and older. Fifty-eight publications were identified that met study inclusion criteria. While few publications reported clear age-related differences, there were significant ethnic differences in living with HIV in later life and also differences among older people when groups were defined by mode of transmission. Findings are discussed in light of constructs from gerontology which may contribute to clarifying how later life, life course stage, and psychological development intersect with, influence, and are influenced by HIV disease and long-term anti-retroviral therapy use.

Keywords

HIV/AIDS; age; risk; ethnicity; adherence; gerontology

Introduction

By 2015, adults aged 50 and older will make up approximately 50% of all HIV/AIDS in the United States (Effros et al., 2008). Between 2001 and 2005, the percentage of older adults¹ with HIV grew by 77% (Centers for Disease Control and Prevention [CDC], 2008) and in

2007 they comprised 15% of new infections in the United States (CDC, 2010). The increased HIV prevalence among older adults is largely due to the success of anti-retroviral therapy (ART).

While attention is focused on disentangling relationships among biological aging, long-term ART use, and enduring HIV infection,² understandings of how the social, behavioral, and cultural aspects of living with HIV and aging influence its course and treatment are less well developed. Gerontology recognizes how social and behavioral factors, associated with later adulthood, influence HIV outcomes and specifies several relevant constructs used to conceptualize age. These include *chronological age of the biological body* – the most frequent measurement of age used in HIV research – representing duration of time since birth. The cultural *life course stage*, defined by a societies age expectations and norms attached to and governing socially constructed eras and transitions (e.g., childhood, adolescence, middle age, and old age), patterns individual behavior (Fry, 1999; Neugarten & Hagestad, 1976). *Historical cohort* refers to groups who share similar historical circumstances and consequent dispositions and conditions (Hareven, 1993). *Psychological development stage* refers to the behavioral capacities of an individual in adapting to changing demands (Brandstader, 1990). Depending on the research question, any one of these constructs may be appropriate for defining a sample and interpreting the results in studies of older age and HIV (Settersten & Mayer, 1997). These constructs along with other confounds and biases can cloud insight into life change processes and obstruct opportunities for understanding the processes of aging with HIV.

This article presents findings from a systematic literature review (1984–2010) of social and behavioral factors associated aging and HIV. Results from the literature review suggest the use of gerontological concepts in advancing research among older adults with HIV/AIDS.

Method

The databases *First Search*, *Proquest*, *Psych Info*, *Medline/Pub Med*, *Wilson Select Plus*, and *World Cat* were searched from the first time old age was mentioned (1984) to articles published in June 2010. The first stage identified all possible articles related to aging and HIV; then, based on a review of these publications, the search terms were refined to “*HIV/AIDS and older adults*”, “*HIV/AIDS and aging*”, “*HIV/AIDS and elderly*”, and “*HIV/AIDS and life course*” since these captured the entire list of articles from the broader search.

A subset of these articles was selected using inclusion criteria (see below), and their bibliographies hand searched to identify additional publications not captured by the keyword approach. Iteratively, this process continued until no new citations meeting study inclusion criteria were found.

Inclusion criteria were: (1) publication in a peer-reviewed journal, (2) report of social or behavioral research (e.g., risk, testing, prevention, quality of life, meaning, stigma, adherence, symptom interpretation, service needs), (3) United States samples, (4) focus on the influence of age, and (5) inclusion of at least one sample subgroup aged 50 and above. In consonance with standard research practice in age and HIV (Emlet & Farkas, 2001), we defined “older age group” as 50 and older. The use of 50 to mark older age was based on

²Research to untangle the interaction between biological aging, disease process, and long-term ART use was reviewed by Luther and Wilkin (2007) and Hardy and Vance (2009). Here, we review the social and behavioral research that addressed that question.

1980s CDC reports of excess morbidity and mortality among older adults³ (Curran et al., 1985).

Excluded from our review were literature reviews, essays, case studies, articles not focused on age-related effects (including age only as a model covariate), and studies with no explicit sub-sample aged 50 and older. One exception was a study of older and younger physicians concerning their beliefs, practices, and knowledge of at-risk older (≥ 50) patients (Skiest & Keiser, 1997). Articles were classified as social and/or behavioral by their keywords, or if unavailable, by their titles or goal statements.

Results

The initial search identified 1051 articles. An additional 498 articles fitting the inclusion criteria were found through hand searches of bibliographies and follow-up searches, for a total of 1549. Applying exclusion criteria limited the data-set to 58 peer-reviewed, data-driven articles addressing social and/or behavioral topics. With few notable exceptions, articles conceptualized age as a demographic variable only.

The majority of studies defined their samples as age 50 and older.⁴ A particular challenge in identifying and assessing the influence of older age was the absence of comparison groups, either younger or older adults with HIV or older people without HIV in almost 75% of the articles. Only 17% compared younger and older cohorts. Studies described adults aged 50 and older with and, in some cases, without HIV. We identified four broad categories: the characteristics of older adults with HIV; the settings and conditions of their lives; social-psychological experiences; and prevention, transmission, and care for older adults with HIV.

Characteristics of older adults with HIV

To understand the heterogeneity within the population of older adults, and its implications for quality of life with HIV, several researchers focused on subgroups and their specific situations and needs. Crystal et al. (2003) studied three HIV transmission groups: gay men/men who have sex with men (MSM), injection drug users (IDUs), and others.⁵ The three groups differed in a number of demographic characteristics such as ethnicity and employment. Notably older IDUs reported lower levels of physical functioning and emotional support compared to younger IDUs and had the worst quality of life among all the groups studied. The authors concluded that these differences reflected the social and cultural settings for the participants' lives, not their underlying biological age.

Joyce, Goldman, Leibowitz, and Alpert (2005) in a study of socioeconomic profiles among adults 18–49 and 50–61 years with HIV found meaningful differences between whites and minorities in access to insurance and financial resources. In a California study of older adults with HIV, Emlet and Farkas (2001) found that the primary source of transmission was homosexual contact (68.4%), although the prevalence of women with HIV increased significantly with age (30–49 vs. 60+ years).

³Gerontologists do not consider 50 years of age to be a marker of social and behavioral conditions associated with older age. Its use in HIV-related social and behavioral research may limit the validity of the findings in understanding issues associated with aging and HIV (Crystal et al., 2003; Mack & Bland, 1999).

⁴The study by Vance and Woodley (2005) which used 50 years of age as the outside marker of the sample (38–50 years) was excluded because it did not include older adults.

⁵In the “other” category, 72% of younger adults acquired HIV heterosexually compared to 44% of older people while 20% of older adults acquired HIV from transfusions compared to 10% of younger adults.

Settings and conditions of the lives of older adults with HIV

Values and beliefs have contributed to several aspects of the epidemic among older adults. Stereotypes of older adults as sexually inactive, as Crystal and Sambamoorthi (1998) note, may have “lowered the physician’s index of suspicion” and contributed to the low rate of testing and late diagnosis of older people (Crystal, LoSasso, & Sambamoorthi, 1999; Ferro & Salit, 1992; Justice & Weissman, 1998; Keitz et al., 1996; Mugavero, Castellano, Edelman, & Hicks, 2007).

Older adults face the task of distinguishing symptoms of HIV from those of aging. Siegel, Bradley, and Lekas (2004) reported that most respondents attributed their fatigue to HIV; only 30% regarded age as the source. No clear relationship between HIV stigma and age has been established. Emlet (2005) found younger adults (20–39 years) reported more (but not statistically significant) experiences of stigma than older adults. Foster and Gaskins (2009) found older African Americans rarely disclosed their HIV status due to a fear of stigma and in order to manage potential stigma. Emlet (2006c) found 68% of older adults experienced both HIV stigma and ageism. The experience of stigma was generally no different between older and younger adults except that younger adults were more likely to fear job loss upon disclosure of HIV. Disclosure was significantly associated with time since diagnosis, heterosexuality, ethnicity, use of HIV services, and having a confidant (Emlet, 2006a). The experience of stigma appeared to diminish with age, with adults 60 and older reporting significantly lower stigma scores than those aged 50–59 years (Emlet, 2007). For older adults, the fear of stigma was related to concerns about rejection and to socially problematic consequences of HIV-related symptoms, which often resulted in social isolation as people limited social contacts (Siegel, Schrimshaw, Brown-Bradley, & Lekas, 2010).

Older adults were less likely to reveal their HIV status than younger adults (Emlet, 2006a; Nokes et al., 2000), but when they did disclose, their reasons were similar to those of younger adults (Emlet, 2008). Poindexter and Shippy (2010) identified three disclosure styles (hiding/selective, partial, and widespread/full) used by older people to manage or resist stigma.

Older adults drew on cultural resources and values to make sense of their diagnosis and to cope with HIV and its stigma (Siegel, Raveis, & Karus, 1998). Unlike young adults with multiple futures and hopes ahead of them, they did not feel cheated by the disease and were not threatened by HIV-related disability. Older adults also drew on renewed spirituality to cope with HIV (Siegel & Schrimshaw, 2002). Emlet, Tozay, and Raveis (2010) identified seven major themes highlighting the resilience and strengths of older adults living with HIV.

In related findings, self-care among older women included a psychological and spiritual dimension (Plach, Stevens, & Keigher, 2005). Over time older women were able to overcome HIV-related barriers to their leisure activities (Gosselink & Myllykangas, 2007).

A life course perspective may provide insight into the differing stigma experiences of older and younger adults (Scheer & Luborsky, 1991). Deviations from the expected life course, such as a sexually transmitted infection in later life, require explanations and justifications and may be seen as evidence of incompetence, irresponsibility, or carelessness (Brandstader, 1990). An HIV diagnosis, if undisclosed, may allow older adults to achieve culturally appropriate late life stage goals and aspirations such as generativity, the transmission of wisdom and opportunity to younger generations (Erikson, 1963; Fisher, 1995; McAdams, 2006). Generativity also motivated older adults to disclose their HIV status, by modeling responsible behavior for younger generations (Emlet, 2008). In contrast, for young adults a chronic, sexually transmitted disease like HIV adversely impacts the life stage goal of partnership creation (Erikson, 1963).

Social-psychological experiences of older adults with HIV

It was established early on that biological age alone could not explain the excess HIV morbidity and mortality among older adults. Subsequently, researchers focused on the social and behavioral dimensions of later adulthood and HIV. Most studies conceptualized age chronologically but some research, drawing on the gerontological literature, noted that 50 years of age was not typically associated with late adulthood or a strong predictor of the dimensions characteristic of late adulthood.

Older adults with HIV often reported high rates of depression. Heckman, Kochman, and Sikkema (2002) found that 25% of older adults had moderate/severe depression which was associated with decreased physical well-being and social support. Grov, Golubb, Parsons, Brennane, and Karpiak (2010) found the rate of major depression to be even higher (39%) and related to loneliness and HIV stigma rather than clinical markers such as CD4 or viral load. Struggles with substance use have long plagued veterans. In a comparison of older veterans with and without HIV, Green et al. (2010) found that although active drug use/abuse was common for both groups, current drug use was more common for HIV+ individuals. Drug use was associated with increased rates of medical and mental health problems.

In one of the few studies of social support for older adults, Schrimshaw and Siegel (2003) found that it helped mitigate HIV distress, positively affecting both mood and distress levels. Those with more co-morbidities and physical strain reported greater levels of social support (Shippy & Karpiak, 2005). Older minorities, both men and women, had smaller social networks and were more at risk for isolation than older whites or younger adults (21–39) (Emlet, 2006b). Schable, Chu, and Diaz (1996) found that older women with HIV were more likely to live alone than younger women with HIV, and financial concerns plagued their lives (Keigher, Stevens, & Plach, 2004).

Older adults: HIV prevention, transmission and care

Older adult HIV prevention and risk—Most articles on risk and/or prevention were concerned only with identifying and describing behaviors of uninfected older adults, and not on understanding age-related factors. Less than half of the 20 risk/prevention studies reviewed included comparison groups of people younger than 50 years and few subdivided age 50 and older into subgroups (Altschuler, Katz, & Tynan, 2004). An absence of comparison groups prevents the attribution of behaviors discussed to age related factors. Findings tended to be over-generalized to all individuals aged 50 and older.

Several studies described the sexual activity of older adults (Lovejoy et al., 2008; Sormanti & Shibusawa, 2007), challenging the stereotypes of asexuality. Stall and Catania (1994) reported that the types of risk behaviors of older adults were similar to younger adults. However, older adults were one-sixth as likely to use condoms and one-fifth as likely to seek testing in comparison to people in their twenties. Wutoh et al. (2005) found reluctance to use condoms among HIV+ older adults despite their acknowledgment of HIV's seriousness. Reported findings do not represent features of old age per se but rather describe an age cohort structured by social processes that may have changed; thus, they may not adequately describe later cohorts.

Sexual risk taking differs between older HIV+ men and women. Lovejoy et al. (2008) found that almost three quarters (74%) of heterosexual men were sexually active, more than gay/bisexual men (36%) and women (21%). Older women had more difficulty in resuming a sexual relationship than older men after an HIV diagnosis (Siegel & Schrimshaw, 2003), were likely to have never used a condom prior to their HIV diagnosis, were likely to be

tested for HIV only after being hospitalized (Schable et al., 1996), and did not feel the need to be tested despite engaging in HIV risk behaviors (Akers, Bernstein, Henderson, Doyle, & Corbie-Smith, 2007). Johnson and Sterk (2003) identified gender differences in late-onset crack use and in sexual risk behaviors. Older women, often introduced to crack by their young adult children, felt that their substance use and sexual behavior violated age norms. In contrast, older men, more likely to be introduced to crack by younger female sex partners, did not feel their behavior was age inappropriate. These differences may be important for the development of HIV prevention programs.

In a study examining the influence of age on risk behavior, Schensul, Levy, and Disch (2003) found that persons aged 50–61 years were more likely to engage in sexual and drug risk behaviors than those aged 62 or older, but no more likely than individuals younger than 50 years. Uninfected older adults had little interest in learning about HIV (Altschuler et al., 2004; Mack & Bland, 1999; Wright, Drost, Caserta, & Lund, 1998) and did not believe they were at risk (Maes & Louis, 2003). Older women were particularly uninformed (Henderson et al., 2004). Jackson, Early, Myers, Schim, and Penprase (2005) found older African Americans had general knowledge of HIV, but lacked understanding about transmissibility, were disinclined to use condoms, and did not believe they were at risk despite risk behaviors, especially among men. Later research, perhaps an indication of cohort differences, found older adults more willing to learn about HIV (Small, 2010).

Minority elders had less knowledge about HIV than whites, but Latinos were more willing than whites or African Americans to attend HIV education programs (Altschuler, Katz, & Tynan, 2007). Few (30%) state public health departments had risk reduction materials geared toward older adults (Orel, Wright, & Wagner, 2004). In a review of the 1996 Behavioral Risk Factors Surveillance System, Mack and Bland (1999) concluded that theories of risk behavior and prevention should take into account life course stage, and they argued that HIV prevention models based on risk behaviors of younger adults were not appropriate for older adults. Holtgrave et al. (1995) urged that prevention programs be tailored to developmental stage. The results of our literature review suggest that this goal remains elusive.

Social and behavioral factors associated with excess HIV morbidity and mortality in older adults—A 1987 conference sponsored by the National Institute on Aging examined the higher HIV mortality rates (Centers for Disease Control and Prevention [CDC], 1998; Curran et al., 1985; Moss & Miles, 1987; Riley, Ory, & Zablotsky, 1989) of older adults and asked: “Do older persons differ in some critical or fundamental way from their younger counterparts in terms of HIV/AIDS risk, prevention, and/or intervention?” (Levy, Holmes, & Smith, 2003, p. S206). They concluded that there is a pressing need to understand how HIV is experienced by people at different life course stages and to define carefully the way that age is constructed to ensure valid results.

Late diagnosis and thus more severe illness at the time of diagnosis was an early topic of investigation. Siegel, Schrimshaw, and Dean (1999a, b) found that older individuals sometimes confuse the symptoms of aging with HIV, which leads to a delay in testing.

In some cases ethnic and age disparities in HIV outcomes appeared to have combined. Older minorities were less likely to report symptoms prior to HIV diagnosis than younger whites (Zingmond et al., 2003) and more likely than whites to be diagnosed with HIV after they became sick (Zingmond et al., 2001). Despite appearing healthier than whites when diagnosed, older non-whites deteriorated clinically more rapidly, which may have been due to less effective treatment. Skiest and Keiser (1997) found both primary care and family

practice physicians lacked an accurate understanding of older adults' HIV risk, which may have resulted in lack of access to treatment.

After the introduction of ART, excess morbidity and mortality among older adults declined. Piette, Watchel, Mor, and Mayer (1995) found older adults with HIV had lower self-rated health and poorer physical and social function compared to younger adults. Nokes et al. (2000) concluded that although older adults had higher mortality and co-morbidity rates, and more limited physical functioning than younger adults, there were no significant differences in quality of life. Regardless of HIV status, the sexuality of older men is challenged by age. Sharma et al. (2007) found older men reported poor body image (31%), which was independently associated with an increased body mass index, fair/poor self-rated health, depression, and erectile dysfunction. They recommend older men with HIV or at risk for HIV be screened for these conditions.

These findings span a period of time covering significant developments in HIV treatment and document a pattern of underdiagnosis and treatment suppression for older adults, indicating the need for greater awareness of the bias confronting older adults and institutional and system level issues in care delivery.

Adherence—Siegel, Schrimshaw, and Raveis (2000) identified a number of factors, including side effects, stigma, and fatigue, that influenced levels of adherence. Investigations into possible links between age-related differences in adherence and excess morbidity and mortality among older adults were inconclusive. Wutoh et al. (2001) found older adults generally more adherent than younger individuals, except when health problems intervened. Hinkin et al. (2004) found older adults were three times as adherent to ART and more likely to be adherent at the 95% level than younger adults. Barclay et al. (2007) found poor adherence was twice as high for younger than older adults. Poor self-esteem and lack of perceived utility predicted younger adults' non-adherence, but only decreased levels of neuro-cognitive functioning predicted older adults' poor adherence. In contrast, Johnson, Heckman, Hansen, Kochman, and Sikkema (2009) found that negative affect had a mediating influence on adherence, but identified no association with neuropsychological functioning. Wutoh et al. (2005) found older adults reporting barriers to ART adherence had lower CD4 and higher viral load than those not reporting barriers. The likelihood of identifying barriers went down with increased age.

HIV-related needs—Emlet and Berghuis (2002) found older and younger adults regarded home care services as important and received similar types of care. Although kinds of needs differed, service utilization was related to functional impairment, not age (Emlet & Farkas, 2002).

In a survey of 13 Washington State Area Agencies on Aging, Emlet, Gerkin, and Orel (2009) found that although most (84%) affirmed that part of their mission was meeting the needs of older adults with HIV, few had experience or training in this.

Discussion

In summary, the studies reviewed found older and younger adults engaged in similar HIV risk behaviors, but older adults did not perceive themselves to be at risk for HIV and were reluctant to take preventive measures even after an HIV diagnosis. Until recently, older adults were not interested in learning about HIV risk nor were age appropriate information materials available. Late diagnosis was thought to account for much of the initial excess morbidity and mortality of older adults. This delay may have been partially due to stereotypes held by health professionals that led them to forgo testing their older patients for

HIV and, possibly, to under-treat them once diagnosed. Clear age-based differences were identified in the area of adherence, with older adults reporting better adherence to ART than younger adults except when suffering from AIDS-related dementia. Age differences were also identified in the settings and experiences of living with HIV, with older adults scoring equal to or better than younger people on several quality of life indicators. Ethnicity and mode of transmission were more significant in accounting for many differences than chronological age.

The studies highlighted the limits of using chronological age alone. Age did not account adequately for the social and behavioral outcomes of older adults with HIV. The impact of and adjustment to HIV were not uniform across older adults. Researchers described difficult lives often plagued by depression and fear of HIV disclosure but also the significant strength of older adults in coping with HIV. These studies described biases against older adults and the impact of these biases on health outcomes. Except in a few research topics, such as adherence to ART, research designed to find age-related differences in various social and behavioral aspects of HIV had limited success. With some notable exceptions, research designs generally did not conceptualize age other than chronological. Use of age 50 to denote older adulthood limited understanding of the relationship of developmental age, life course stage or biological age and HIV.

There are several limitations to this study. We selected studies with samples defined by age 50, excluding several topically relevant studies with samples outside inclusion criteria. Understandings of the disease and its treatment have changed over time. Thus, findings from samples drawn before ART was available may provide an inaccurate picture of the post-ART situation for older people. We have not examined in detail the methods of the studies discussed, but included both quantitative and qualitative investigations. Our objective was to provide a broad overview of the social and behavioral factors associated with aging with HIV; however, we were restricted by the limits of search engines to identify relevant qualitative studies (Evans, 2002; Greenhalgh & Peacock, 2005), which may have enriched our understanding of the challenges faced by older adults and the resources available to them.

In conclusion, to study age and HIV we recommend using the full range of concepts germane to aging to better attend to confounds such as cohort effects. Gerontology has documented the cultural disvaluing of the elderly and the implicit bias this can introduce into care for and research focused on older people and HIV. Luther and Wilkin (2007, p. 579) call attention to the entrenched nature of this disvaluing in their review of a CDC conducted meta-analysis of 18 HIV prevention programs in which none included older adults and some explicitly excluded them (Lyles et al., 2007). Research designs exploring cultural attitudes and beliefs associated with aging with HIV should pay attention to the role of health care providers, policy-makers, and the public's stereotypes about older people. Like the process of aging itself, HIV is shaped more by the individual's social, physical, cultural, and economic setting than by biological senescence. This review has illustrated that chronological age is less relevant to HIV risk and explanations of excess HIV morbidity and mortality than the influence of social and cultural settings on risk perception, testing behavior and physician practice patterns. We have suggested that HIV researchers might find in gerontology a productive engagement as the field moves forward to address the complex interactions of aging with HIV. The concepts of heterogeneity and ageism borrowed from gerontology as well as the distinctions among different conceptualizations of age may contribute to untangling the complex interrelationships among biological aging, disease process, and the social and behavioral sequelae of aging with a stigmatizing illness.

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Table 1
The findings of social and behavioral research conducted in the United States on HIV and older adults from 1985 to 2010.

Method	Sample	Findings
<i>Characteristics of older adults with HIV</i>		
HIV + individuals and socio-economic status (SES) profile, social support, QoL (Crystal et al. 2003)	Structured interviews National HIV Cost and Services Utilization Study (HCSUS) sample $N = 2857$; HIV+ (<50 , ≥ 50) ^a ; (<50) = 90%; $M = 76.6\%$, $W = 23.4\%$; AA = 31.8%, WH = 68.2% (≥ 50) = 10%; $M = 84.1$, $W = 15.9\%$; AA = 40.7%, WH = 59.3%	<ul style="list-style-type: none"> Older gay men predominately WH and more likely to have insurance than younger people. Older IDUs predominately AA with ↑ disadvantages and ↓ SES, physical functioning and emotional support. Characteristics and care needs of >50 are diverse and differ sharply by exposure.
Descriptive analysis of older adults with HIV in California (Emlert and Farkas 2001)	Secondary data analysis $N = 571$; HIV+ (30–49, 50–59, ≥ 60) (30–49) = 55.7%, $M = 87.4\%$, $W = 12.6\%$; AA = 23.7%; WH = 53.2%, $L = 19.6\%$, $O = 2.2\%$ ^b (50–59) = 33.3%; $M = 86.3\%$, $W = 13.7\%$; AA = 18%, WH = 65.1%, $L = 14.3\%$, $O = 2.6\%$ (≥ 60) = 11%; $M = 77.8\%$, $W = 22.2\%$; AA = 21%, WH = 61.3%, $L = 11.3\%$, $O = 6.5\%$ ^b	<ul style="list-style-type: none"> The major exposure categories for all age groups were: men who have sex with men (68.4%), injection drug use (16.8%), heterosexual contact (19.2%), and contaminated blood products (5.5%). The percentage of women increased significantly as age increased (30–49, 60+). Women were more likely to live alone, to have private health insurance and to have died in the study. Women tend to be “invisible victims” of HIV/AIDS epidemic. Socio-demographic characteristics play a role in the lives of older adults with HIV/AIDS.
SES circumstances of older HIV/AIDS patients (Joyce et al. 2005)	Secondary data analysis $N = 2840$; HIV+ (18–49, 50–61) (18–49) = 90.2%; $M = 76.6\%$, $W = 23.4\%$; AA = 31.7%, WH = 49.5%, $L = 15.4\%$, $O = 3.4\%$ (50–61) = 9.2%; $M = 84\%$, $W = 16\%$; AA = 39.7%, WH = 48.8%, $L = 10.1\%$, $O = 1.4\%$	<ul style="list-style-type: none"> Older WH most likely gay men with ↑ education, private insurance and financial resources in comparison to HIV population as whole. Older minorities ↓ economic resources. Need to develop policies to improve access to new drug therapies.
<i>Settings and conditions of the lives of older adults with HIV</i>		
Validity of a scale designed to measure HIV stigma (Emlert 2005)	Structured interviews $N = 88$; HIV+ (20–39, ≥ 50); (20–39) = 50%; (≥ 50) = 50% $M = 69\%$, $W = 31\%$; AA = 20.5%, WH = 70.5%, $O = 9\%$ ^c	<ul style="list-style-type: none"> Older adults nonsignificant ↑ scores on blaming subscale. Younger adults significant ↑ scores on discrimination. W nonsignificant ↑ mean stigma scores in comparison to M. AA significant ↑ scores on Blaming subscale in comparison to WH. 13 items HIV stigma scale showed good internal consistency and identified three subscales to help distinguish experiences of stigma.
HIV stigma and disclosure patterns, compare older and younger (Emlert 2006a)	Structured interviews $N = 88$; HIV+ (20–39, ≥ 50); (20–39) = 50%; $M = 50.8\%$; AA = 20.5%, WH = 70.5, $L = 6.8\%$, $O = 2.3\%$ (≥ 50) = 50%; $M = 49.2\%$; AA = 20.5%, WH = 70.5%, $L = 6.8\%$, $O = 2.3\%$	<ul style="list-style-type: none"> No significant differences in stigma between older and younger groups. Younger ↑ fear losing job due to HIV; older ↓ disclosure. Disclosure significantly associated with time since diagnosis, heterosexual disclosure, ethnicity (↓ AA), use of HIV services, and having a confidant. Stigma associated with ethnicity (↑ AA), having a confidant, and instrumental social support.
Ageism and HIV stigma (Emlert 2006c)	In-depth interviews $N = 25$; HIV+ (50–72); $M = 68\%$, $W = 32\%$; AA = 36%, WH = 60%, $L = 4\%$	<ul style="list-style-type: none"> 68% of older adults experienced ageism and HIV-related stigma. Race did not appear to influence ageism and stigma.

Method	Sample	Findings
		Results support double jeopardy hypothesis to understand stigma experienced by older people with HIV.
		<ul style="list-style-type: none"> Ageism/HIV Stigma Intersection Themes: rejection, stereotyping, separate/alone. HIV Stigma Themes: fear of contagion, homophobia, violations of confidentiality, protective silence. Ageism Themes: employment discrimination, internalized ageism. Four Categories of Themes: social discrimination, institutional discrimination, anticipatory stigma, and others.
Stigma experiences in older adults with HIV/AIDS: mixed methods (Emlet 2007)	$N = 25$; HIV+ (50–72), (50–59, ≥ 60); $M = 68\%$, $W = 32\%$; AA = 40%, WH = 60%	<ul style="list-style-type: none"> Stigma significant and + correlated with depression. AA significant $\uparrow$ stigma compared to WH. 60+ scored lower on all subscales and total stigma compared with those 50–59. 11 themes from qualitative data on stigma experiences corresponded with the four categories of the stigma subscale. Stigma subscales (Themes) <ol style="list-style-type: none"> 1. Personalized Stigma (Rejection, Fear of Contagion, Alone). 2. Negative Self-Image (Other, Self depreciation). 3. Disclosure Concerns (Protective Silence, Anticipated Disclosure, Unintended Disclosure, Violations of Confidentiality). 4. Public Attitudes (Stereotyping, Homophobia).
Reasons for HIV disclosure (Emlet 2008)	$N = 25$; HIV+ (50–72), (50–59, ≥ 60); $M = 68\%$, $W = 32\%$; AA = 40%, WH = 60%	<ul style="list-style-type: none"> Model of disclosure patterns emerged from qualitative interviews. Seven major themes related to disclosure (protective silence, anticipatory disclosure, violations of confidentiality, unintentional disclosure, and intentional disclosure). Reasons for status disclosure among older adults were similar to those identified in other studies for younger adults. Generativity and educate others were factors motivating older people to disclose. Twenty-five percent had confidentiality violated.
Resilience in aging with HIV (Emlet et al. 2010)	$N = 25$; HIV+ (≥ 50); $M = 68\%$, WH = 60%, AA = 36%, L = 4%	<ul style="list-style-type: none"> Majority of older adults reported resilience and strengths related to living with HIV/AIDS. Seven major themes related to resilience and strengths [self-acceptance (36%), optimism (68%), will to live (35%), generativity (40%), self-management (68%), relational living^d, and independence (52%)].
Older AA and HIV stigma (Foster and Gaskins 2009)	$N = 24$; HIV+ >50; $M = 70.8\%$, $W = 29.2\%$; AA = 100%	<ul style="list-style-type: none"> Focus groups resulted in four major themes related to HIV/AIDS stigma: disclosure, stigma experiences, need for HIV/AIDS education, and acceptance of the disease.

Method	Sample	Findings
Leisure experiences of older women with HIV/AIDS (Gosselink and Myllykangas 2007)	Survey, in-depth interviews, photovoice $N = 4$; HIV+ (≥ 50), (50–56); $W = 100\%$; AA = 1, WH = 3	<ul style="list-style-type: none"> Standardized stigma measures revealed internalized shame about having HIV as the major source of stigma rather than experiencing direct stigma. Identified differences in time, access, and meaning of leisure activities pre-/post-HIV. Longer length of time living with HIV was associated with increased resilience to barriers to leisure. Women who were diagnosed more recently experienced more challenges to leisure. Overall, as the disease progressed, women developed a more spiritual view of leisure.
Knowledge of HIV risk and risk behavior for ≥ 50 (Maes and Louis 2003) ^e	Survey $N = 166$; HIV+ (≥ 50), (50–86); $M = 33\%$, $W = 67\%$; “mainly white” = 94%	<ul style="list-style-type: none"> Gender, knowledge of, perceived susceptibility to, and perceived threat of AIDS significant predictors of the likelihood of using safe sex. Low belief in susceptibility despite 10% with multiple sexual relationships.
Health-related QoL for older and younger people with HIV (Nokes et al. 2000) ^e	Survey $N = 713$; HIV+ (< 50 , ≥ 50) (< 50) = 89.8%; $M = 77\%$, $W = 23\%$; AA = 40%, WH = 44%, L = 8%, O = 9% (≥ 50 , 50–64) = 10.2%; $M = 75\%$, $W = 25\%$; AA = 34%, WH = 38%, L = 19%, O = 9%	<ul style="list-style-type: none"> Older people reported more medical conditions, physical limitations, and reported disclosing to fewer people in comparison to younger people with HIV.
How older HIV+ women perceive and practice self-care (Plach et al. 2005)	In-depth interviews $N = 9$; HIV+ (50–56); $W = 100\%$; AA = 44.4%, WH = 44.4%, L = 11.1%	<ul style="list-style-type: none"> Narrative analyses of self-care among older women reveal the importance of maintaining physical health and sustaining heart, mind and soul.
Diagnosis disclosure decisions (Poindexter and Shippy 2010)	Focus groups $N = 34$; HIV+ (≥ 50), (50–73); $M = 58.8\%$, $W = 41.2\%$; AA = 47%, WH = 8.8%, L = 26.5%, O = 17.6% ^b	<ul style="list-style-type: none"> Three types of disclosure themes: hiding/selective (46%), partial (17%), and widespread/complete (37%). Decisions about disclosing HIV status are highly variable, complex and related to stigma management/resistance. These findings highlight the importance of the social and psychological aspects of understanding HIV experience.
Perceived advantages and disadvantages of age among older HIV+ (Siegel et al. 1998)	In-depth interviews $N = 63$; HIV+ (50–68); $M = 70\%$, $W = 30\%$; AA = 40%, WH = 36%, L = 24%	<ul style="list-style-type: none"> Narrative analyses reveal themes about the advantages and disadvantages of older age. Advantages of older age: $\uparrow$ wisdom, do not feel cheated, $\uparrow$ respect health/life, patience/contentment/moderation, less psych threatened by disability/fatigue, and focus on own needs. Disadvantages of older age: body $\downarrow$ resilient, $\uparrow$ social isolation, $\downarrow$ sympathy and judged harshly, MDs set $\downarrow$ goals for treatment, too compliant/conservative.
Benefits of religious/spiritual coping among older HIV+ (Siegel and Schrimshaw 2002)	In-depth interviews $N = 63$; HIV+ (≥ 50), (50–68); $M = 71\%$, $W = 29\%$; AA = 44%, WH = 36%, L = 24%	<ul style="list-style-type: none"> Identified nine benefits of spiritual/religious beliefs: (1) comforting emotions and feelings; (2) $\uparrow$ strength, empowerment, and control; (3) eases emotional burden of illness; (4) social support/belonging; (5) spiritual support through relationship with God; (6) meaning/acceptance of illness; (7) preserves health; (8) relieves fear/uncertainty of death; (9) $\uparrow$ self-acceptance and $\downarrow$ self-blame.

Method	Sample	Findings
Attributions of fatigue among middle-aged, older HIV+(Siegel et al. 2004)	In-depth interviews $N = 100$; HIV+ (≥ 50); $N = 49$ with fatigue; $M = 67\%$, $W = 33\%$; AA = 33%, WH = 33%, L = 33%, O = 1%	<ul style="list-style-type: none"> Findings on benefits of religious/spiritual beliefs provide insight on how beliefs influence psychological adjustment. Casual attributions of fatigue symptoms guide management of illness and medications. These views often shaped by HCP and others HIV+.
Emotional distress associated with diarrhea among older HIV+ (Siegel et al. 2010)	In-depth interviews $N = 100$; HIV+ (≥ 50); $N = 29$ with diarrhea; (50–67); $M = 75.9\%$, $W = 20.7\%$, $L = 3.4\%$; AA = 37.9%, WH = 31.0%, L = 24.1%, O = 6.9% ^b	<ul style="list-style-type: none"> Diarrhea causes people with HIV to experience emotional distress and social isolation. Three themes related to distress from diarrhea: I don't control diarrhea/it controls me; feel ashamed/dirty/tainted; fear what diarrhea is doing to me/what it means. Diarrhea must be aggressively managed among people with HIV.
<i>Social-psychological experiences of older adults with HIV</i>		
Age, social networks and social isolation (Emlet 2006b)	Structured interviews $N = 88$; HIV+ (20–39, ≥ 50); (20–39) = 50%; $M = 50.8\%$; AA = 20.5%, WH = 70.5, L = 6.8%, O = 203% (≥ 50) = 50%; $M = 49.2\%$; AA = 20.5%, WH = 70.5%, L = 6.8%, O = 2.3%	<ul style="list-style-type: none"> Similar social network patterns among older and younger. Older adults more likely to live alone. ↑ social isolation in older adults (38%) and in older minorities (54%). Older men and older minorities' significant ↓ scores on social network scale. Confidant and instrumental support significantly correlated with ↓ HIV stigma.
Drug use and abuse among HIV+/- Vets (Green et al. 2010)	Survey VACS $N = 6351$; (22–86) (≤ 40 , 41–50, 51–60, >60) ^d HIV- = 50%; $M = 92.1\%$, $W = 7.9\%$; AA = 69.1%, WH = 24.5%, L = 10%, O = 3.6% HIV+ = 50%; $M = 97.5\%$, $W = 2.5\%$; AA = 66.5%, WH = 20.2%, L = 9.4%, O = 3.9%	<ul style="list-style-type: none"> Identified five patterns of drug use: non-users, past mainly marijuana users, past multidrug users, current high consequence drug users, and current low consequence drug users. HIV- (36.4%) non-users while current high consequence users were more prevalent among HIV+(25.5%). Current users had ↑ medical or mental health disorders. HIV+ were more likely to be low consequence marijuana users.
Relationship of loneliness and stigma HIV+ >50 (Groves et al. 2010)	Survey $N = 914$; HIV+ (≥ 50); $M = 70\%$; WH = 13%, AA = 50%, L = 33%; O = 4%	<ul style="list-style-type: none"> 39.1% of participants exhibited symptoms of major depression, ↑ than reported in other samples. Older adults with HIV had ↓ to depression for perceived health, ↑ HIV stigma and loneliness compared to other HIV populations. Findings indicate these variables may be specific problems for older adults.
Depressive symptoms among older HIV+ and chronic illness quality of life model (Heckman et al. 2002)	Survey $N = 83$; HIV+ (50+, 50–69); "mainly men"; AA = 38%, WH = 51%, O = 11%	<ul style="list-style-type: none"> Need to look beyond objective measures of health and disease progression (e.g. CD4, VL). By focusing on ↓ loneliness and ↓ stigma may help ↓ depression and ↑ perceived health among older adults with HIV. ≈25% older HIV+ adult's mod to severe levels of depression. Depression related to ↓ physical well-being and ↓ social support. CIQOL Model accounted for 41% of variance in depressive symptoms.

Method	Sample	Findings
HIV+ women: health, social and economic challenges (Keigher et al. 2004)	In-depth interviews $N = 9$; HIV+ (≥ 50); W = 100%; AA = 44.4%, WH = 44.4%, L = 11.1%	<ul style="list-style-type: none"> Gero-practitioners should identify and address ↑ depression among older HIV+ adults. Life stories indicate financial insecurity as major issue for older HIV+ women. Findings support feminization of poverty among the elderly. Financial resources, social support, health care and health needs are crucial for survival and successful aging of older women with HIV.
Risk behaviour and characteristics of older HIV + women (Schable et al. 1996) ^e	Structured interviews $N = 556$; HIV+ W; ($<50 = 497$, $\geq 50 = 59$); <50 AA = 65%, WH = 19%, L = 15% ≥ 50 AA = 47%, WH = 27%, L = 22% ^b	<ul style="list-style-type: none"> Older women (hetero transmission) ↑ divorced/widowed, more likely to have not completed high school, to live alone, to be tested for HIV while hospitalized, and to never have used condom before HIV diagnosis in comparison to younger women. Older women also more likely to stop sexual activity after HIV diagnosis than younger women.
Barriers to social support for ≥ 50 with HIV (Schrimshaw and Siegel 2003)	In-depth interviews $N = 63$ HIV+ (≥ 50), (50–59); M = 71%, W = 29%; AA = 40%, WH = 36%, L = 24%	<ul style="list-style-type: none"> Older adults reported inadequate social support (42%) and practical assistance (27%). Barriers to support included: non-disclosure of status, others' fear of HIV/AIDS, desire to be independent/self-reliant, not wanting to be a burden, unavailability of family, friends died from AIDS, and ageism. Older adults may experience ↑ social isolation due to barriers to social support.
Perceptions of support among older HIV+ (Shippy and Karpik 2005)	Survey $N = 160$; HIV+ (50–59, 60+); 50–59 = 85%, 60+ = 15%; M = 66%, W = 34%; AA = 63%, WH = 11%, L = 22%, O = 4%	<ul style="list-style-type: none"> People with ↑ co-morbidities and ↑ physical strain were more likely to report adequate social support, whereas people with ↓ complaints reported ↑ need for emotional/instrumental support. Isolation and stigma may influence why older adults with HIV rely on formal caregivers and lack informal support networks.
<i>HIV prevention, transmission and care</i>		
Lack of interest in HIV testing in older at-risk women (Akers et al. 2007)	Secondary data analysis, structured interviews, in-depth interviews $N = 514$; HIV– (≥ 50); W = 100%; AA = 72.6%, WH = 3.3%, L = 2%, O = 22.8% ^b	<ul style="list-style-type: none"> Only 22% of older women were interested in HIV testing. Decreased interest in HIV testing was associated with increased age, with being African American, and with higher HIV risk factors. No HIV test associated with age, AA, and ↓ perceived risk. Overall lack of interest in testing was related to perceived lack of need/risk and prior history of HIV testing. Need to teach older women about HIV risk and how to accurately self-assess HIV risk.
Adults 50+ and HIV/AIDS prevention (Altschuler et al. 2004)	Survey $N = 249$; HIV– (50 = 64, 65–74, 75–84, 85+); M = 34%, W = 62%; O = 4%; AA = 11.5%, WH = 62.7%, L = 14.3%, O = 11.5%	<ul style="list-style-type: none"> Majority of participants expressed an interest in a HIV/AIDS program to educate older adults.
HIV/AIDS research and education among minority >50 (Altschuler et al. 2007)	Survey $N = 249$; HIV– (50–64, 65–74, 75–84, 85+); M = 34%, W = 62%, O = 4%; AA = 11.5%, WH = 62.7%, L = 14.3%, O = 11.5%	<ul style="list-style-type: none"> Minorities had ↓ HIV knowledge, 50% are not concerned about HIV.

Method	Sample	Findings
Age-associated predictors of ART adherence (Barclay et al. 2007)	Survey, structured interviews, neurocognitive testing, MEMS caps	<ul style="list-style-type: none"> • Latinos more likely to attend HIV education programs. • Poor adherence 2x as high among younger people than older; low self-esteem and lack of perceived utility → low adherence for young. • Decreased neuro-cognitive functioning → low adherence for old.
Service priorities, use and needs of older and younger people with HIV (Emllet and Berghuis 2002)	Survey, secondary data analysis	<ul style="list-style-type: none"> • Older and younger received similar HIV care, services important to both. • Physical therapy, home chore, meals, adult day care important for older. • Older people less likely to be homeless or use drugs in past year.
Utilization of health, medical and psychosocial services (Emllet and Farkas 2002)	Survey, secondary data analysis	<ul style="list-style-type: none"> • Age not related to service utilization. • Functional impairment, mortality → service utilization; insurance, geographic location → home care services. • ↑ Women, living alone, private health insurance, and mortality among older people. • ↓ Survival time from AIDS diagnosis to death among older people.
Area Agency on Aging and HIV (Emllet et al. 2009)	Survey	<ul style="list-style-type: none"> • 84% agree serving older people with HIV part of mission, but have little experience delivering these services.
What ≥50 women know about HIV and their information sources (Henderson et al. 2004)	Structured interviews	<ul style="list-style-type: none"> • Mean HIV knowledge score for ≥50 W = 3.7 out of 9. • TV main source of information; attention needed for this group.
Adherence: effect of age, cognitive status, substance use (Hinkin et al. 2004)	Neuro-psychological tests, structured interview, MEMS Caps	<ul style="list-style-type: none"> • HIV+ ≥50 three times more likely to be "good adherers". • ≥50 with poor adherence more likely to have neuro-psychological impairment.
HIV knowledge, seriousness, susceptibility, risk among AA (Jackson et al. 2005)	Survey, focus groups	<ul style="list-style-type: none"> • Older AA generally had high levels of HIV knowledge. But held misperceptions about HIV: (1) transmission through casual contact, (2) low personal risk for HIV despite having sex without using condoms and drug use.
Late-onset crack use (Johnson and Sterk 2003)	Ethnographic observation, in-depth interviews, HIV testing	<ul style="list-style-type: none"> • Three types of M late-onset: prior IVU, heavy alcohol users, no history of alcohol use, introduced • Two types of W late-onset: no prior experience with crack; familiar through sex partners or children.
Adherence to ART in >50 (Johnson et al. 2009)	Survey	<ul style="list-style-type: none"> • Neuro-psychological functioning not associated with adherence.

Method	Sample	Findings
Patterns and correlates of sexual activity and condom use among 50+ people with HIV/AIDS (Lovejoy et al. 2008)	Survey $N = 290$; HIV+ (≥ 50); $M = 67\%$, $W = 33\%$; AA = 50%; WH = 30%, O = 20%	<ul style="list-style-type: none"> Negative affect mediates effects of social support and maladaptive coping on adherence. 62% were not sexually active in last three months, 26% used condoms regularly, 7% used condoms irregularly but only had sex with HIV sero-concordant partners, 6% used condoms irregularly with HIV –unknown status. Among sexually active, 27% of hetero men used condoms inconsistently compared to 37% gay/bisexual men and 35% of heterosexual women. Secondary risk prevention needed for ≥ 50 HIV + adults.
HIV testing behaviors and attitudes regarding HIV/AIDS (Mack and Bland 1999)	Structured interviews, secondary data analysis $N = 94,339$; HIV– (18–49, 50–64); (18–49) = 77.6% (50–64) = 22.4% $M = 47.7\%$, $W = 52.3\%$; AA = 10.2%, WH = 78.1%, L = 8.5%, O = 3.1% ^{a,d}	<ul style="list-style-type: none"> People ≥ 50 differ from those < 50 in key areas: testing, perceived risk, HIV knowledge. Conceptual models for young not appropriate for older. HIV prevention efforts need to take into account needs and developmental stage of this group. Need & uarr; health promotion, ↑ data on sexual risk behaviours/orientation for older.
Knowledge of HIV risk and risk behavior for > 50 (Maes and Louis 2003) ^e	Survey $N = 166$; HIV– (≥ 50), (50–86); $M = 33\%$, $W = 67\%$; “mainly white” = 94%	<ul style="list-style-type: none"> Gender, knowledge of, perceived susceptibility to, and perceived threat of AIDS significant predictors of the likelihood of using safe sex. Low belief in susceptibility despite 10% with multiple sexual relationships.
Health related QoL for older and younger people with HIV (Nokes et al. 2000) ^e	Survey $N = 713$; HIV+ (< 50 , ≥ 50); (B50) = 89.8%; $M = 77\%$, $W = 23\%$; AA = 40%, WH = 44%, L = 8%, O = 9% (≥ 50 , 50–64) = 10.2%; $M = 75\%$, $W = 25\%$; AA = 34%, WH = 38%, L = 19%, O = 9%	<ul style="list-style-type: none"> Older people reported more medical conditions, physical limitations, and reported disclosing to fewer people in comparison to younger people with HIV.
HIV/AIDS risk reduction materials for older adults (Orel et al. 2004)	Survey $N = 50$ state public health departments	<ul style="list-style-type: none"> 30% ($N = 15$) of states had HIV prevention materials for older adults.
Does age influence the impact of HIV on QoL? (Piette et al. 1995) ^d	Survey $N = 369$; HIV+ (< 30 , 30–39, 40–49, ≥ 50); (< 30) = 23.8%, $M = 81.8\%$; $W = 18.2\%$; WH = 59.1%, O = 40.9%, (30–39) = 52%; $M = 82.3\%$, $W = 17.7\%$; WH = 63.5%, O = 36.5% (40–49) = 19.2%; $M = 94.4$, $W = 5.6\%$; WH = 73.2%, O = 26.8% (≥ 50) = 4.9%; $M = 88.9\%$, $W = 11.1\%$; WH = 72.2%, O = 27.8%	<ul style="list-style-type: none"> Older age worse MOS scores in physical function, social function, and health perception but less pain.
Risk behavior and characteristics of older HIV + women (Schable et al. 1996) ^e	Structured interviews $N = 556$; HIV+ W ; ($< 50 = 497$, $\geq 50 = 59$); (< 50) AA = 65%, WH = 19%, L = 15%; (≥ 50) AA = 47%, WH = 27%, L = 22% ^b	<ul style="list-style-type: none"> Older women more likely to live alone (24%), to receive an HIV test while hospitalized (51%), and to never have used condom before HIV diagnosis (86%).
Unique risk factors of older persons in low- income housing (Schenkul et al. 2003)	Ethnographic observation, in-depth interviews, Survey $N = 489$; ($< 50 = 91$, $\geq 50 = 398$), (50–61, 62–73, ≥ 74); (≥ 50) $M = 51\%$, $W = 49\%$; (≥ 50) AA = 71%, L = 24% ^b ; (< 50) $M = 47\%$, $W = 53\%$, (< 50) AA = 73%, L = 25% ^b	<ul style="list-style-type: none"> ≥ 50 sexually active, condom use is low. 50–61 same HIV risk as < 50, more likely to see selves at risk for HIV than ≥ 62 but no more likely to use condoms.

Method	Sample	Findings
Body image, BMI and HIV status among older men with HIV or at risk (Sharma et al. 2007)	Structured interviews $N = 550$; (≥ 50); $M = 100\%$ HIV- = 228; ($50-81$); $AA = 49.6\%$, $WH = 18.9\%$, $L = 23.7\%$, $O = 7.9\%$ HIV+ = 322, ($49-74$); $AA = 59\%$, $WH = 12.4\%$, $L = 22.7\%$, $O = 5.9\%$	<ul style="list-style-type: none"> • Injections major new HIV route. Interaction of age with perceived HIV risk and high risk drug and sex practices explain variation in risk of sexual transmission. • Interaction of age, HIV knowledge, sexual risk contributed most to variation in risk of IVD transmission. • Older men (regardless of HIV status) reported poor body image (31%) which was independently associated with ↑ BMI, self-rated fair/poor health, depression, and erectile dysfunction. • Depression, sexual dysfunction, and obesity screenings are needed for older men with HIV or at risk for HIV.
Symptoms and testing delay, care for older HIV+ (Siegel et al. 1999a)	In-depth interviews $N = 78$; HIV+ (>50), ($50-68$); $M = 74\%$, $W = 26\%$; $AA = 41\%$, $WH = 40\%$, $L = 19\%$	<ul style="list-style-type: none"> • Ambiguity concerning symptoms attributed to aging or other illnesses contributed to delay in seeking HIV testing.
Symptom ambiguity among middle-aged and older HIV+ (Siegel et al. 1999b)	In-depth interviews $N = 67$; HIV+ (≥ 50), ($50-68$); $M = 72\%$, $W = 28\%$; $AA = 40\%$, $WH = 36\%$, $L = 24\%$	<ul style="list-style-type: none"> • Symptom ambiguity may cause confusion and distress and therefore may affect treatment decision-making.
Accounts of non-adherence to HIV meds among older (Siegel et al. 2000)	In-depth interviews $N = 49$; HIV+ (≥ 50); $M = 82\%$, $W = 18\%$; $AA = 45\%$, $WH = 51\%$, $L = 4\%$	<ul style="list-style-type: none"> • Utilizes Scott and Lyman's (1968) typology of excuses and justifications to explore patient non-adherence.
Reasons for celibacy among older HIV+ (Siegel and Schrimshaw 2003)	In-depth interviews $N = 30$ Celibacy Subsample; HIV+ (≥ 50), ($50-68$); $M = 53\%$, $W = 47\%$; $AA = 43\%$, $WH = 34\%$, $L = 23\%$	<ul style="list-style-type: none"> • Excuses for non-adherence: side effects, no food available when needed, busy lives, tiredness, conceal meds/can't reveal status. Justifications for non-adherence: some flexibility won't hurt me, no evidence of impact of non-adherence, VL undetectable so ok to slack, strict adherence is unattainable goal. • Identified few age related reasons for non-adherence.
Primary care MDs' beliefs, practices and knowledge >50 PWH (Skiest and Keiser 1997)	Survey $N = 124$; MD (<40 >) MD (29-78)	<ul style="list-style-type: none"> • 78% of women and 36% of men adopted celibacy after HIV diagnosis. • M&W both feared infecting others but women reported loss of interest in sex, anger and distrust of men, and desire to focus on selves.
50+ Adults HIV knowledge (Small 2010)	Survey, focus groups $N = 50$; HIV- (≥ 50), ($50-87$); $M = 32\%$, $W = 68\%$; $AA = 20\%$, $WH = 78\%$, $O = 2\%$	<ul style="list-style-type: none"> • Primary MDs have inadequate knowledge of HIV risk for people >50 and rarely discuss HIV risk with their patients.
Predictors of condom use, HIV testing among older women (Sormanti and Shibusawa 2007)	Structured interviews $N = 1280$; HIV- ($50-64$); $W = 100\%$; $AA = 38\%$, $WH = 4.1\%$, $L = 52.6\%$, $O = 5.2\%$ ^b	<ul style="list-style-type: none"> • Older adults willing to participate in learning about HIV/AIDS. • Only 12% use condoms. • Education, employment, HIV status → condom use. Age, recruitment site → HIV testing.

Method	Sample	Findings
HIV/AIDS risk behaviours among Americans >50 (Stall and Catania 1994)	HIV- (≥50), (50–59, 60–69, 70–75) National sample N = 11148; M = 46.4%; W = 53.6%; WH = 85.7%, AA = 7.7%, L = 5%, O = 1.7%; High-risk sample N = 20748; M = 44.8%, W = 55.2; WH = 64.9%, AA = 21.8%, L = 9.7%, O = 3.6%	<ul style="list-style-type: none"> 10% of each sample had at least one HIV risk factor. People ≥ 50 one-sixth as likely to use condoms and one-fifth as likely to be tested as comparison group of at-risk people in their twenties.
Are older adults knowledgeable of HIV/AIDS? (Wright et al. 1998)	Survey	<ul style="list-style-type: none"> Older adults generally knowledgeable but about one-third lacked knowledge on transmission and confidentiality issues.
Alternative therapies, ART adherence among persons 50+ (Wutoh et al. 2001)	Structured interviews	<ul style="list-style-type: none"> Focus on health care beliefs model. Complexity of ART may put older at > risk for non-adherence. Explored patient accounts for non-adherence.
Treatment perceptions and attitudes of older HIV+ adults (Wutoh et al. 2005)	Structured interviews	<ul style="list-style-type: none"> ↑ Perceived barriers to using ART = ↓ CD4 and ↑ VL. 21% used Complementary and Alternative Medicine (CAM); they had ↑ perceptions of severity and ↑ perceived barriers to ART use than non-users of CAM. ↑ Perceptions of ART related burden = ↑ likelihood of using CAM. Relatively high rate of sexual activity; almost 33% report multiple sexual partners in last month. Despite awareness of severity of their HIV disease, people in study did not modify their sexual behaviour.
Circumstances at HIV diagnosis and disease progression (Zingmond et al. 2001)	Structured interviews	<ul style="list-style-type: none"> ≥50 non-whites more often diagnosed after becoming ill; at diagnosis appear healthier than WH but deteriorate clinically more quickly; possibly due to unequal access to effective treatment.
Differences in symptom expression in older HIV patients: veterans cohort study (Zingmond et al. 2005)	Secondary data analysis	<ul style="list-style-type: none"> Older non-whites report fewer symptoms than whites <50. Age influences symptom reporting but may be influenced by ethnicity or other factors.

Notes: M, men; W, women; O, other; T, transgender; AA, African American; WH, White; NW, non-white; L, Latino; IDU, injection drug users.

^a Sample age categories are shown in parenthesis.

^b Not all% equal 100.

^c Study only provided combined age group demographics.

^d Percentage not provided.

^eThis article had findings relevant to two categories, therefore it appears twice in the table.

^fEthnicity information missing.

^gWeights applied to sampling frame to adjust for unequal probabilities of selection and to make post-stratification adjustments