Barriers and facilitators to HIV testing in people age 50 and above: a systematic review

Authors: Elaney Youssef, Vanessa Cooper, Valerie Delpech, Kevin Davies and Juliet Wright

Approximately 13% of people living with HIV in the UK are unaware of their infection. New diagnoses among people aged ≥50 years is increasing. Unique factors may be associated with testing in this group. This systematic review aims to identify patient and clinician-related barriers/facilitators to HIV testing in people aged ≥50 years. A systematic electronic search was conducted. Papers were assessed for eligibility and data from eligible studies were extracted. Barriers/facilitators were grouped, and the number of times they were reported was noted. Because of considerable heterogeneity, a narrative approach has been undertaken to synthesise data. In total, 17 studies were included. Main barriers to testing were low perceived risk and clinicians’ preconceptions about older people. Main facilitators were regular use of healthcare services or being offered/encouraged to test by a healthcare provider. Although being encouraged to test was a common facilitator, clinicians’ preconceptions about older people was the biggest barrier. This shows a divide between clinicians’ preconceptions and patients’ expectations, which may impact on testing rates. This review is an important first step in identifying potential barriers/facilitators for further study or to be addressed in the design of future interventions.

KEYWORDS: Barriers, facilitators, HIV testing, older age, systematic review

Introduction

Effective treatment has transformed HIV into a manageable long-term condition. Despite advances in treatment, approximately 13% (95% CI 10–17%) of people living with HIV in the UK are unaware of their infection. Most new transmissions occur from someone who is unaware of their HIV infection; therefore, improving testing and reducing undiagnosed HIV is key to improving treatment outcomes and reducing onward transmission.

Barriers , facilitators , HIV testing , older age , systematic review

Although overall rates of new HIV diagnoses in the UK are decreasing, the number of older people (age ≥50 years) newly diagnosed with HIV in the UK is increasing. Furthermore, people diagnosed with HIV aged ≥50 years are much more likely to be diagnosed late (with a CD4 count of <350 cell/mL or presenting with an AIDS defining event) and continue to be disproportionately affected by late diagnosis (LD). LD has significant implications for patients and health services in terms of poorer health outcomes and increased healthcare costs, both of which are increased in older age. Further, older people experience a faster clinical decline than someone younger.

The high rate of LD in older people suggests unique factors may be associated with testing for HIV in this group. HIV testing guidelines suggest testing in general practice and in all general medical admissions where the HIV prevalence is high (>2 per 1000). However, despite varied testing initiatives – such as routine testing in primary and secondary care, community outreach programmes and home sampling – increasing rates of LD suggest the older population are not routinely testing for HIV. Although adults remain sexually active into older age, preconceptions about a lack of sex in this group may impact on test offer rate. One UK study in a high prevalence area found that although uptake of HIV tests was high among patients admitted to hospital (>90%), older people were less likely to be offered a test by a clinician. This may partly explain the continued rise in LD among older people despite a significant proportion having seen a healthcare provider (HCP) shortly before their diagnosis. This systematic review aims to specifically identify patient and clinician-related factors associated with HIV testing in people aged ≥50 years.

Methods

A systematic electronic search was conducted on 7 April 2016 using MEDLINE, Embase, PsychINFO, CINAHL and the Cochrane library; relevant conference abstracts were also searched. Search terms can be found in Table 1.

All retrieved articles were exported to Endnote, de-duplicated and tabulated in Excel for abstract review. Two reviewers independently reviewed abstracts to identify studies potentially meeting the inclusion criteria (Box 1). Any study published before 1997 was excluded because we felt that attitudes towards testing would be significantly different in the pre-therapy era when an HIV diagnosis would have meant a significantly poorer outcome. Any disagreement was solved through...
Barriers/facilitators to HIV testing in older age

Table 1. Search terms

| HIV                                      | Barrier* adj3 HIV |
|------------------------------------------|------------------|
| Advanc* adj3 age*                        | Facilitat* adj3 HIV |
| Advanc* adj3 year*                       |                   |
| Age* adj2 (50* OR fifty)                 | Facilitat* adj2 factor* |
| Ageing                                   |                   |
| Aging                                    | Test* adj3 barrier* |
| Middle age*                              | Late* diagnos*    |
| Elderly                                  | Delay* diagnos*   |
| Geriatric                                |                   |
| Increas* age*                            |                   |
| Mature                                   |                   |
| Old* age                                 |                   |
| Old* adult*                              |                   |
| Old* cohort*                             |                   |
| Old* people                              |                   |
| Old* person*                             |                   |
| Senior                                   |                   |
| over adj2 (50* OR fifty)                 |                   |

Note: terms within columns were combined with ‘OR’, terms between columns were then combined with ‘AND’ – ie papers were identified if the title/abstract/keywords contained at least one term from each column.

Results

Electronic database searching identified 1,752 potentially relevant papers. After removal of duplicates (n=655), 1,097 were subjected to abstract review, of which 204 met the eligibility criteria (Box 1). Full text review was conducted, resulting in 14 eligible papers being included in the review. Reference and citation searching of eligible papers yielded a further three papers to be included (Fig 1).

The majority of included studies were conducted in the USA (n=14), with the remainder conducted in the UK (n=1), Brazil (n=1) and Uganda (n=1) (Table 2). Studies were mainly descriptive and data were both qualitative and quantitative using a range of methodologies. Sample sizes ranged from 11 to >143,000. Studies tended to include a greater proportion of men although three studies were conducted solely in women.11–13

Study quality ranged from 2 to 10 (Table 3). Of the 17 included studies, two (12%) were good quality and 12 (71%) moderate quality. Included qualitative studies lacked information on whether potential confounding factors were identified and taken into account, and whether participants were recruited in an acceptable way to avoid selection bias. Included qualitative studies lacked detail on the methodology used and reported little information on the interaction between the researcher and participants, including how this interaction may affect bias. Three studies (18%) were low quality.

Percentage uptake of HIV testing was reported in nine studies. Three studies reported testing rates over the previous 12 months – ranging from 3–56%. Seven studies looked at whether participants had ever had an HIV test, which ranged from 25–77%. One study investigated length of time since last test and found that of those who had reported a previous test, 70% had last tested >5 years before. Several factors associated with a decision to test for HIV in older people were identified (Table 4). Patient and clinician factors were separated into perceptual and practical factors as suggested in the perceptions and practicalities approach.14

Perceptual factors

Patient-related factors associated with testing for HIV

Three studies found HIV testing to be associated with high perceived risk of HIV.15–17 Conversely, one study15 reported low perceived risk as a factor associated with testing. HIV knowledge/awareness was another commonly reported factor, described in four studies: one found people with higher HIV knowledge scores were significantly more likely to have tested for HIV15 and three found having greater awareness of HIV or knowing someone with AIDS or tuberculosis was associated with testing.13,15,17 Two questionnaire-based studies found testing was significantly associated with reporting high-risk behaviours.18,19 Similarly, testing to protect a partner or because a partner was HIV-positive or at high-risk were also reported as associated with testing for HIV in studies using qualitative interviews, survey or case note review.12,17,18

Two studies12,17 reported testing because of ‘curiosity’ – for example to eliminate uncertainty about status.12 Experiencing symptoms attributed to HIV was related to testing emerging from qualitative studies15,21 and perceived
poorer health status was also reported as a factor associated with testing. Further, belief in AIDS-related conspiracy theories was found to be a factor associated with testing in one study from the USA.

Patient-related factors associated with not testing for HIV
Five studies reported low perceived risk to be associated with not testing for HIV. This included the perception HIV was a young person’s disease or not feeling part of a high-risk group. Two qualitative studies found not having symptoms or not attributing symptoms to HIV was associated with not testing. Stigma either relating to HIV or being older with HIV was reported by two studies. The same studies also reported fear of a positive result as a barrier to testing. Other factors, reported once, included government mistrust and hopelessness associated with a lack of treatment.

Clinician-related factors associated with not testing for HIV
Three studies using surveys or qualitative methods reported preconceived ideas about older people as a barrier to offering an HIV test to an older person. This included the perception that older people lack understanding regarding HIV, that they are at less risk or that they are not comfortable discussing sexuality. Similarly, HCPs feeling uncomfortable with risk factor questioning or addressing risk of older people was reported by two studies.

Practical factors
Patient-related factors associated with testing for HIV
The most commonly reported practical factor associated with testing for HIV was regular use of healthcare services, reported by eight studies. Having a usual source of care, testing during hospitalisation or because of blood donation. Further, being offered/encouraged to test by a HCP was reported by three studies using surveys or qualitative methodologies. Similarly, experiencing physical symptoms was associated with a

© Royal College of Physicians 2017. All rights reserved.
| Author, year | Study design | Country | Sample size | Sample characteristics | Testing rates | Practical factors associated with test | Perceptual factors associated with test | Practical factors associated with non-test | Perceptual factors associated with non-test |
|--------------|--------------|---------|-------------|------------------------|---------------|----------------------------------------|----------------------------------------|------------------------------------------|------------------------------------------|
| Ford, 2015   | Cross-sectional analysis from survey data | USA     | 143,247     | Age range 50–64 years, 52% female, 77% white | 3% had tested for HIV in the previous 12 months | Saw doctor in the last year; high reported risk behaviours |  |
| Ford, 2013   | Cross-sectional analysis from survey data | USA     | 226         | Age range 50–85 years, mean age 56.1 years (SD = 5.1), 64.6% male, 46.5% Hispanic, 25.2% non-Hispanic black, 18.1% non-Hispanic white, 10.2% other | 55% tested within previous 12 months; 26.5% never tested for HIV | Recent reported IVDU, having health insurance | Beliefs in AIDS-related conspiracy theories | Government mistrust |
| Iyer, 2011   | Cross-sectional, questionnaire based survey of physicians | USA     | 47 complete questionnaires | Physicians were asked about testing in adults age >65 years; physicians 66% male | Not reported | Physicians uncomfortable with risk factor questioning; clinicians perceived patients to lack understanding | Lack of time; lacking information about HIV | Physicians uncomfortable with risk factor questioning; clinicians perceived patients to lack understanding |
| Lekas, 2005  | Cross-sectional, retrospective, qualitative, interview-based study | USA     | 35          | Age range 52–68 years, mean age 59.8 years (SD=4.9), 71% male, 40% African American, 46% white, 14% Puerto Rican | Not reported | Gay/bisexual men encouraged to test by a HCP; having physical symptoms; awareness of HIV; wanting to protect partner | Gay/bisexual men high perceived risk and exposure; suspicion of HIV infection; to take better care of their health; eliminate uncertainty about status | Gay/bisexual men: hopelessness associated with lack of treatments; denial of high-risk behaviour; seeing friends/partners die of AIDS; lack of awareness regarding HIV risk factors; attributing symptoms to something other than HIV |
|              |              |         |             |            |                            | Heterosexual drug users: experiencing HIV-related symptoms; being offered a test by a HCP | Heterosexual non-drug user; knowing someone with AIDS; experiencing symptoms; being offered a test by a HCP | Heterosexual drug users: experiencing HIV-related symptoms; being offered a test by a HCP | Heterosexual non-drug user; not feeling part of a high-risk group |
### Table 2. (Continued)

| Author, year | Study design                                                                 | Country  | Sample size | Sample characteristics | Testing rates | Practical factors associated with test | Perceptual factors associated with test | Practical factors associated with non-test | Perceptual factors associated with non-test |
|--------------|-------------------------------------------------------------------------------|----------|-------------|------------------------|---------------|----------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| Adekeye, 2012 | Cross-sectional analysis from survey data                                     | USA      | 12,366      | Age >50 years; 46.4% male; 75.4% white, 51.9% non-Hispanic white, 25.9% Hispanic | 25.4% had previously been tested for HIV. Of these, 70.1% had tested >5 years ago | Having tested for HIV before; knowing about or knowing someone with TB | Perceived high/medium risk for HIV | Perceived low/no risk for HIV |
| Alencar, 2015  | Qualitative study using semi-structured interviews                            | Brazil   | 11          | Age range 60–75 years, average 68 years; 73% male | Not reported | Testing during hospitalisation |  | Perception HCP saw older people as asexual; feeling HCPs (particularly younger HCPs) were uncomfortable with addressing sexuality of older patients |
| Barnett, 2011  | Mixed methods (quantitative and qualitative) survey with patients and in-depth interviews with staff | USA      | Survey n=99 Interviews n=17 | Age >50 years; 54.5% male; 39.4% African American, 28.3% Hispanic, 24.2% European American, 6.1% Asian, 2% Other | Not reported | As part of a regular (annual) check-up; HCPs consider testing when patients present with an indicator disease or disclose risk factors during history taking | High perceived risk of HIV |  | HCP didn’t consider HIV in older as much as younger patients; HCPs feel patients are not comfortable discussing sexuality; HCPs felt older people take precautions against HIV; HCPs felt there was a lack of information provided to older people about HIV |
| Ford, 2015 (AC) | Cross-sectional analysis from survey data                                    | USA      | 1,238 (≥50 n=226) | Age range 17–85 years; 65% male; 46% Hispanic/Latino, 25.2% black, 18.1% white, 10.6% other | 77% had been tested in the past; 56% tested within last 12 months | Having a usual source of care |  | Lower perceived risk of HIV |
| Author, year | Study design | Country | Sample size | Sample characteristics | Testing rates | Practical factors associated with test | Perceptual factors associated with test | Practical factors associated with non-test | Perceptual factors associated with non-test |
|-------------|--------------|---------|-------------|------------------------|--------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Kuteesa, 2012 | Descriptive design using qualitative research methods (participant observation, in-depth interviews and focus groups) | Uganda | 40 (focus group discussions (n=24); individual interviews (n=16)) | Age range 50–80 years, mean age 65 years 50% female | Not reported | Stigma related to HIV or being older with HIV; fear of a positive HIV result |
| Mensforth, 2014 | Retrospective case notes review | UK | 34 >60 years | Not reported | HCP having a reason to test; patient presenting with an opportunistic infection; patient diagnosed with another STI; patient presenting with seroconversion illness; partner with a positive HIV status; as part of an asymptomatic STI screen | HCP not identifying a clinical indicator disease |
| Wigfall, 2010 | Cross-sectional analysis from survey data | USA | 3,521 | Age range 50–64 years, mean age 57 years 59% female 67% non-Hispanic white, 33% non-Hispanic black | 30.8% had been tested for HIV in the past | Reporting no problems with health insurance; having financial means to pay for healthcare | Perceived fair or poor health status |
| Author, year | Study design | Country | Sample size | Sample characteristics | Testing rates | Practical factors associated with test | Perceptual factors associated with test | Practical factors associated with non-test | Perceptual factors associated with non-test |
|-------------|--------------|---------|-------------|------------------------|--------------|----------------------------------------|-----------------------------------------|---------------------------------------------|---------------------------------------------|
| Wigfall, 2011<sup>11</sup> | Cross-sectional analysis from survey data | USA | 2,027 | Age range 50–66 years 100% Female | 26% had been tested for HIV in the past (excluding blood donation); 14% had tested for HIV in post reproductive age | Low reported HIV risk | Not reported | Testing due to illness; testing in hospital; having a usual source of care |
| Zingmond, 2001<sup>27</sup> | Cross-sectional analysis from survey data | USA | Total n=2,864; ≥50 group n=286 | In the ≥50 group: age range 50–77 years, mean age 55.3 years, median age 53.5 years 16% female 48% white, 41% African American, 10% Hispanic, 2% other | Not reported | Testing due to illness; testing in hospital; having a usual source of care |
| Akers, 2007<sup>12</sup> | Qualitative and quantitative cross-sectional analysis from survey data | USA | 514 | Age range 50–95 years, mean age 62 years (SD=8.1) 100% female 73% African American 32.9% had tested in the past. 70.6% reported being not interested in HIV testing | High HIV knowledge score | Curiosity; safety; high-risk partner; never previously tested for HIV; testing to be healthy |
| Akers, 2008<sup>13</sup> | Cross-sectional analysis from survey data | USA | 488 | Age range 50–84 years, mean age 61.9 years (SD=8.1), median age 61 years 100% Female 73% African American, 17% white/non-Hispanic, 22% other | 34.6% had tested previously | HCP of refusing an HIV test | HCP not suggesting an HIV test; poorer HIV knowledge; lower actual risk of HIV | Low perceived risk of HIV; low level of sexual activity |
### Table 2. (Continued)

| Author, year | Study design | Country | Sample size | Sample characteristics | Testing rates | Practical factors associated with test | Perceptual factors associated with test | Practical factors associated with non-test | Perceptual factors associated with non-test |
|--------------|--------------|---------|-------------|------------------------|---------------|---------------------------------------|----------------------------------------|-------------------------------------------|-------------------------------------------|
| Siegel, 1999²¹ | Descriptive, qualitative study; in-depth interviews | USA | 78 | Age range 50–68 years, mean age 56 years (SD=5.5) 74% male | Not reported | Experiencing symptoms attributed to HIV | Being asymptomatic or attributing symptoms to something other than HIV |
| | | | | 41% African American, 19% Puerto Rican, 40% non-Hispanic white | | | |
| | | | | 41% African American, 19% Puerto Rican, 40% non-Hispanic white | | | |
| Mack, 1999²² | Cross-sectional analysis from survey data | USA | 21,998 | Age range 50–64 years 52.3% female 78% white, 10% black, 9% Hispanic | Ever tested: older adults (50–64 years) = 26.6%; younger adults (18–69 years) 46.8% | Part of routine check-up; due to hospitalisation; during blood donation; because of illness; because of doctor referral | Don’t test because of pregnancy | Lower HIV knowledge |
| Studies                  | Did the results fit with other available evidence? | Did the results address a clearly focused issue? | Was the cohort recruited in an acceptable way to minimise selection bias? | Was the exposure and outcome accurately measured to minimise bias? | Have the authors identified all important confounding factors? | Have the authors taken confounding factors into account in the design and/or analysis? | Was the follow up of subjects complete and long enough? | Were the results precise? | Do you believe the results? | Can the results be applied to the local population? |
|-------------------------|--------------------------------------------------|-----------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------|--------------------------------|-----------------------------|---------------------------------------------------------------|
| Ford, 2015              | Y                                                | Y                                             | Y                                                        | Y                                                              | Y                                                              | Y                                                              | N                                               | Y                                                             | Y                          | Y                                                             |
| Ford, 2013              | Y                                                | Y                                             | N                                                        | Y                                                              | Y                                                              | Y                                                              | N                                               | N                                                             | Y                          | N                                                             |
| Iyer, 2011              | Y                                                | Y                                             | N                                                        | Can't tell                                                     | Y                                                              | Can't tell                                                     | N                                               | Can't tell                                                     | Y                          | N                                                             |
| Adekeye, 2012           | Y                                                | Y                                             | N                                                        | Y                                                              | Can't tell                                                     | Y                                                              | N                                               | Y                                                             | Y                          | N                                                             |
| Barnett, 2011           | N                                                | Y                                             | N                                                        | N                                                              | N                                                              | N                                                              | N                                               | N                                                             | Y                          | N                                                             |
| Ford, 2015              | Y                                                | Y                                             | Can’t tell                                               | Can’t tell                                                     | Y                                                              | Y                                                              | Y                                               | Y                                                             | Y                          | Y                                                             |
| Mensforth, 2014         | N                                                | Y                                             | Can’t tell                                               | Can’t tell                                                     | Y                                                              | Can’t tell                                                     | N                                               | Can’t tell                                                     | Y                          | N                                                             |
| Wigfall, 2010           | N                                                | Y                                             | N                                                        | N                                                              | Y                                                              | Can’t tell                                                     | Y                                               | N                                                             | Y                          | N                                                             |
| Wigfall, 2011           | N                                                | N                                             | N                                                        | N                                                              | Y                                                              | Can’t tell                                                     | Y                                               | N                                                             | Y                          | N                                                             |
| Zingmond, 2001          | Y                                                | Y                                             | N                                                        | Y                                                              | Y                                                              | Y                                                              | Y                                               | Y                                                             | Y                          | N                                                             |
| Akers, 2007             | Y                                                | Y                                             | N                                                        | Can’t tell                                                     | Y                                                              | Can’t tell                                                     | N                                               | Can’t tell                                                     | Y                          | N                                                             |
| Akers, 2008             | Y                                                | Y                                             | Can’t tell                                               | Can’t tell                                                     | Y                                                              | Can’t tell                                                     | N                                               | Can’t tell                                                     | Y                          | N                                                             |
| Mack, 1999              | N                                                | Y                                             | Can’t tell                                               | Can’t tell                                                     | Y                                                              | Can’t tell                                                     | N                                               | Can’t tell                                                     | Y                          | N                                                             |
| Akers, 2007             | Y                                                | Y                                             | N                                                        | Y                                                              | Y                                                              | Y                                                              | Y                                               | Y                                                             | Y                          | N                                                             |
| Total score /10          | 8/10                                             | 6/10                                          | 4/10                                                     | 6/10                                                           | 3/10                                                           | 7/10                                                           | 2/10                                            | 8/10                                                          | 8/10                                                | 8/10                                                          |
# Table 3B. Qualitative study quality

| Qualitative studies | Lekas, 2005 | Alencar, 2015 | Barnett, 2011 | Kuteesa, 2012 | Siegel, 1999 |
|---------------------|------------|--------------|--------------|--------------|-------------|
| Was there a clear statement of the aims? | Y | Y | Y | Y | Y |
| Is the qualitative methodology appropriate? | Y | Y | Y | Y | Y |
| Was the design appropriate to address the aims? | Y | Y | Y | Y | Y |
| Was the recruitment strategy appropriate to address the aims? | Y | Y | N | Y | N |
| Was the data collected in a way that addresses the research issue? | Y | Y | N | Y | N |
| Has the relationship between researcher and participant been adequately considered, and has their own role been examined to reduce bias? | N | N | Y | N | N |
| Have ethical issues been considered? | N | Y | Y | Y | N |
| Was the data analysis sufficiently rigorous? | N | N | N | Y | N |
| Is there a clear statement of findings? | N | N | N | Y | Y |
| Is the research valuable? | Y | Y | Y | Y | Y |
| **Total score /10** | 6/10 | 7/10 | 6/10 | 10/10 | 5/10 |

decision to offer an HIV test. Having health insurance or financial means to pay for healthcare was significantly associated with a decision to test for HIV in studies from the USA. Patient-related factors associated with not testing for HIV People who had tested for HIV previously were less likely to test again. One study acknowledged that older, menopausal women did not attend for antenatal care resulting in a lost

# Table 4. Factors associated with test and non-test

| Perceptual factors associated with test | Perceptual factors associated with non-test | Practical factors associated with test | Practical factors associated with non-test |
|---------------------------------------|--------------------------------------------|---------------------------------------|--------------------------------------------|
| High perceived (or actual) risk       | Low perceived risk                         | Regular use of healthcare services    | Having tested for HIV previously           |
| HIV-related knowledge or awareness    | No symptoms or symptoms not associated with HIV | Offered or encouraged to test by a healthcare provider | HIV test not suggested by a healthcare provider |
| To protect partner or because of partner’s status/risk | Stigma                                     | Physical symptoms                      | Dislike of needles                         |
| Curiosity                             | Fear of a positive result                  | Having health insurance or the financial means to pay for healthcare |
| Symptoms attributed to HIV            | Hopelessness regarding lack of treatment    |                                         |                                             |
| Perceived poor health status          | Government mistrust                        |                                         |                                             |
| Belief in AIDS-related conspiracy theories |                                         |                                         |                                             |

Clinician

| Preconceptions about older people (including older people lack understanding of HIV, older people are less at risk and older people would feel uncomfortable) | Patient presenting with symptoms or disclosing risk factors | Lack of HIV information and failure to identify a clinical indicator disease |
| Clinician uncomfortable addressing risk factor questioning/sexuality of older patients | Testing as part of a routine check-up | Lack of time |
Clinician-related factors associated with offering an HIV test

HCPs were more likely to offer a test when a patient presented with symptoms or disclosed high-risk behaviours, indicated in one survey and in a study that used a case notes review design. Offering an HIV test as part of a routine check-up was reported by one survey as a facilitator.

Clinician-related factors associated with not offering an HIV test

A lack of HIV-related information, including not being able to identify an HIV clinical indicator disease and a feeling that HIV-related information was not available to older people were reported as factors associated with not offering an HIV test. One study reported lack of time as a barrier.

Discussion

Several factors associated with a decision to test for HIV in older age have been identified. The most commonly reported patient-related factors associated with test were frequently using healthcare, high perceived or actual risk of HIV, having some HIV-related knowledge and being offered/encouraged to test by a HCP. Conversely, the most commonly reported patient-related factor associated with not testing was low perceived risk of HIV.

Low risk perception is a commonly cited barrier to HIV testing regardless of age, highlighted in a previous review. However, despite disclosing HIV risk behaviours, some patients still perceive themselves to be at low risk. In the older population, this low perceived risk may be exacerbated by the perception HIV is a young person’s disease. Despite public opinion, evidence shows that many older people remain sexually active; one study indicated the main reason for lack of sex in this group may be physical limitations, not because of lack of desire or opportunity. Indeed, there has been an increasing emergence of online dating sites aimed at older people. Although this is not unique to older people, relationship transitions – common in older age – may increase the likelihood of meeting new partners after an established relationship. Studies indicate condom use among older people is low, which may be due to a lack of confidence in negotiating condom use when starting a new relationship, or because postmenopausal women no longer worry about pregnancy. Additionally, availability of drugs such as sildenafil mean erectile dysfunction may no longer be a barrier to sex for older men. Physiological changes in older age, such as vaginal dryness, may actually put older women at increased risk of HIV.

Misperceptions about older people were the most commonly identified barrier to offering an HIV test to older people; however, greater engagement with healthcare was associated with testing. It is therefore salient that HCPs’ preconceptions about older people or feeling embarrassed in terms of addressing their risk may prevent them from offering older patients an HIV test. This shows a mismatch between what clinicians perceive older people feel regarding HIV testing and what they may actually feel. This phenomenon may in part be due to fear of harming the doctor-patient relationship or a lack of training on how to initiate a conversation with a patient around HIV testing. This is in line with evidence from one study indicating that GPs do not feel sexual health is a suitable topic to discuss with older patients. Not having a HCP discuss HIV with this group may actually reinforce their perception that they are not at risk. However, HIV tests have been repeatedly found to be acceptable to patients; one study found >90% of patients (all ages) accepted an offer of a routine HIV test; however, older people were significantly less likely to be offered a test by a clinician.

The themes identified in this review may be useful in designing interventions to increase testing rates in the older population. In order for intervention(s) to be successful, they will have to address patient and clinician-related barriers. Routine screening in secondary care may overcome some of the identified barriers; it would help to normalise HIV testing and expose the older population to health promotion messages, salient since a lack of HIV knowledge was also shown to be a barrier to testing in this group. This would also overcome a need for self-identifying as at-risk as everyone would be eligible to test, and may alleviate any uncomfortable feelings HCPs may have in risk factor questioning with this group. Additionally, this approach would overcome having to identify a clinical indicator disease in order to offer an HIV test, which has been suggested as one of the biggest barriers associated with non-adherence to testing guidelines in the UK. However, HIV testing guidelines already suggest routine screening of all acute admissions in high prevalence areas but increasing rates of LD among the older population suggests this is not occurring.Clinicians would therefore need adequate training and encouragement to routinely offer HIV tests.

Routine screening in primary care may also be appropriate to increase testing rates in older adults. Many interactions with healthcare services in older age occur in primary care, for example for the management of comorbidities. Also, familiarity with the GP may make conversations regarding HIV easier although there is little evidence about how a relationship with a clinician might affect willingness to discuss sexual health in this group. Despite this, primary care may present a more appropriate venue for testing. However, because GPs don’t always proactively address sexual health in older populations, specific training or incentives may be required in order to achieve this. Potential cost implications will have to be considered.

Limitations

Reviewed studies used diverse methods to assess different aspects of care meaning it was not possible to compare findings across studies, or between different populations. As a result, a narrative approach was undertaken to synthesise data. Although this methodology is most appropriate, there is the potential for bias in terms of over or under representation of study data. Included studies were mostly from the USA and so findings may not be generalisable, particularly to settings were healthcare services are not privatised. Further, some included studies were conducted several years ago and it is acknowledged that ongoing advances in HIV may mean factors associated with a decision to test for HIV identified in these studies may not still be relevant. Lastly, it is also acknowledged that sexual behaviour and attitudes to HIV testing is likely to vary between...
people aged ≥50 years. However, there is little research in this area and so this review is an important first step.

Conclusions
Clinicians’ beliefs that people ≥50 years are not at risk of HIV, or feel uncomfortable discussing risk were the most commonly cited barriers to offering a test. Conversely, being offered or encouraged to test by a HCP was among the most commonly cited facilitators to testing. This shows a divide between clinicians’ preconceptions and patient’s expectations, which may impact on testing rates. These findings suggest that it is important for clinicians not to make preconceptions about risk of HIV in older people. Further, routine test offer – regardless of patient age – would encourage more of these patients to test for HIV. A gap between patients’ perceived risk and actual risk may also need to be addressed. However, there is a lack of evidence and more work is needed to verify these findings and establish which factors are relevant to the UK setting.

Conflicts of interest
This work is part of EY’s NIHR Doctoral Research Fellowship (Ref: DRF-2015-08-086). All other authors declare they have no competing interests.

Author contributions
All authors were involved with study design and have reviewed the manuscript. Literature searching was performed by EY and data collection, extraction and quality analysis was performed independently by EY and VC. Data analysis was performed by EY, VC and JW and data interpretation by EY, VC, JW and KD.

Acknowledgments
This article presents independent research funded by the National Institute for Health Research (NIHR), the views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

References
1. Kirwan B, Chau C, Brown A, Gill O, Depech V, contributors. HIV in the uk – 2016 report. London: Public Health England, 2016.
2. Hall HI, Holtgrave DR, Maulsby C. HIV transmission rates from persons living with hiv who are aware and unaware of their infection. AIDS 2012;26:893–6.
3. Yin Z, Brown A, Hughes G et al. HIV in the United Kingdom: 2014 report. London: Public Health England, 2014.
4. Antinori A, Coenen T, Costagiola D et al. Late presentation of hiv infection: a consensus definition. HIV Med 2011;12:61–4.
5. Public Health England. HIV: annual data tables. London: Public Health England, 2015. https://www.gov.uk/government/statistics/hiv-annual-data-tables [Accessed 14 September 2017].
6. CASCADE Collaboration. Differences in cd4 cell counts at seroconversion and decline among 5739 hiv-1-infected individuals with well-estimated dates of seroconversion. J Acquir Immune Defic Syndr 2003;34:76–83.
7. British HIV Association, British Association for Sexual Health and HIV, British Infection Society. UK national guidelines for HIV testing 2008. London: British HIV Association, 2008.
8. National Institute for Health and Care Excellence. HIV testing: increasing uptake among people who may have undiagnosed HIV. NICE guideline No 60. London: NICE, 2016.
9. Health Protection Agency. Time to test for HIV: Expanding HIV testing in healthcare and community services in England. London: Health Protection Agency, 2011.
10. Ellis S, Curtis H, Ong EL, (BHIVA) BHA, sub-committee RCFAS. HIV diagnoses and missed opportunities. Results of the British HIV Association (BHIVA) national audit 2010. Clin Med 2012;12:430–4.
11. Wigilait LT, Richter DL, Torres ME et al. HIV testing among midlife women in the deep south: an analysis of the 2008 Behavioral Risk Factor Surveillance System survey data. J Womens Health 2011;20:933–41.
12. Akers A, Bernstein L, Henderson S, Doyle J, Corbie-Smith G. Factors associated with lack of interest in HIV testing in older at-risk women. J Womens Health 2007;16:842–58.
13. Akers A, Bernstein L, Doyle J, Corbie-Smith G. Older women and HIV testing: examining the relationship between HIV testing history, age, and lifetime HIV risk behaviors. Sex Transm Dis 2008;35:420–3.
14. Horne R, Weinman J, Barber N, Elliott R, Morgan M. Concordance, adherence and compliance in medicine taking. London: National Institute for Health Research (NIHR) Serviey Delivery and Organisation (SDO) programme, 2005:11.
15. Adekeye OA, Heiman HI, Onyeabor OS, Hycalith HL. The new invincibles: HIV screening among older adults in the U.S. PLoS ONE 2012;7:e43618.
16. Barnett LC. Factors contributing to the increase in HIV/AIDS and late diagnoses of the virus among older adults. Minneapolis, MN: Walden University, 2011.
17. Lekas HM, Schrimshaw EW, Siegel K. Pathways to HIV testing among adults aged fifty and older with HIV/AIDS. AIDS Care 2005;17:674–87.
18. Ford CL, Godette DC, Mulatu MS, Gaines TL. Recent HIV testing prevalence, determinants, and disparities among U.S. older adult respondents to the behavioral risk factor surveillance system. Sex Transm Dis 2015;42:405–10.
19. Ford CL, Wallace SP, Newman PA et al. Belief in AIDS-related conspiracy theories and mistrust in the government: relationship with HIV testing among at-risk older adults. Gerontologist 2013;53:973–84.
20. Mensforth S, Goodall I, Bodasing N, Coultas J. Late diagnosis among our ageing HIV population: a cohort study. J Int AIDS Soc 2014;17 (Suppl 3):19692.
21. Siegel K, Schrimshaw E, Dean L. Symptom interpretation: implications for delay in HIV testing and care among HIV-infected late middle-aged and older adults. AIDS Care 1999;11:525–35.
22. Wigilait LT, Williams E, Sebastian N, Glover S. HIV testing among deep south residents 50 to 64 years old with cardiovascular disease and/or diabetes. J Natl Med Assoc 2010;102:1150–7.
23. Ford CL, Lee SJ, Wallace SP et al. HIV testing among clients in high HIV prevalence venues: disparities between older and younger adults. AIDS Care 2015;27:189–97.
24. Kutessa MOS I, Cumming R, G.; Negin J. Older people living with HIV in uganda: understanding their experience and needs. Afr J AIDS Res 2012;11:295–305.
25. Iyer KV, Castor T, Malik R, Ehrlich A. Physicians’ screening for HIV risk factors in older adults. J Am Geriatr Soc 2011;59 (Suppl 1):S200.
26. Alencar RA, Ciosak SL. Late diagnosis and vulnerabilities of the elderly living with HIV/AIDS. Rev Esc Enferm USP 2015;49:227–35.
27. Zingmond D, Wenger N, Crystall S et al. Circumstances at HIV diagnosis and progression of disease in older HIV-infected Americans. Am J Public Health 2001;91:1117–20.
28. Mack K, Bland S. HIV testing behaviors and attitudes regarding HIV/AIDS of adults aged 50–64. Gerontologist 1999;39:687–94.
29. Deblonde J, De Koker P, Hamers F et al. Barriers to HIV testing in Europe: a systematic review. Eur J Public Health 2010;20:422–32.
Elaney Youssef, Vanessa Cooper, Valerie Delpech et al.

30 Pringle K, Merchant R, Clark M. Is self-perceived HIV risk congruent with reported HIV risk among traditionally lower HIV risk and prevalence adult emergency department patients? Implications for HIV testing. AIDS Patient Care STDS 2013;27:573–84.
31 Lindau S, Schumm P, Laumann E et al. A study of sexuality and health among older adults in the United States. N Engl J Med 2005;357:762–74.
32 McWilliams S, Barrett A. Online dating in middle and later life: gendered expectations and experiences. J Fam Issues 2014;35:411–36.
33 Sherman C, Harvey S, Noell L. “Are they still having sex?” STIs and unintended pregnancy among mid-life women. J Women Aging 2005;17:41–55.
34 Schick V, Herbenick D, Rece M et al. Sexual behaviors, condom use, and sexual health of Americans over 50: implications for sexual health promotion for older adults. J Sex Med 2010;7(Suppl 5):315–28.
35 Durvasula R. HIV/AIDS in older women: unique challenges, unmet needs. Behav Med 2014;40:85–98.
36 Arya M, Patel S, Kamar D et al. Why physicians don’t ask: interpersonal and intrapersonal barriers to HIV testing – making a case for a patient-initiated campaign. J Int Assoc Provid AIDS Care 2016;15:306–12.
37 Gott M, Hinckel S, Galena E. General practitioner attitudes to discussing sexual health issues with older people. Soc Sci Med 2004;58:2093–103.
38 Hunter E, Perry M, Leen C, Premchand N. HIV testing; getting the message across – a survey of knowledge, attitudes and practice among non-HIV specialist physicians. Postgrad Med J 2012;88:59–65.
39 Gregory S. General practice in England: An overview. London: The King’s Fund, 2009.

Address for correspondence: Ms Elaney Youssef, Brighton and Sussex Medical School, Room 318b Mayfield House, University of Brighton, Falmer, Brighton BN1 9PH, UK. Email: e.k.youssef@bsms.ac.uk

‘This landmark report lays out in the starkest terms yet the devastating impact air pollution is having on our health, our economy and our society as a whole.’

Every breath we take
The lifelong impact of air pollution

This major report plainly sets out the dangerous impact that air pollution has on our nation’s health. Compiled by experts in medicine and environmental sciences, the report discusses the current evidence and draws up recommendations for action.

ISBN 978-1-86016-567-2 £15 including p+p or free to download

Download the report: rclondon.ac.uk/pollution
Order a copy: shop.rclondon.ac.uk

© Royal College of Physicians 2017. All rights reserved.