



Behavioural determinants that influence the uptake of self-testing for HIV: An agile scope of the literature

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Key Messages

- A total of 14 systematic reviews were included in this scoping review. Seven reviews included studies conducted in sub-Saharan Africa, six reviews included studies from OECD and non-OECD countries and one review included studies from the EU/EEA.
- Self-testing was not always clearly defined by the systematic reviews, with some only including studies where self-testing meant both administering and interpreting test results. This could potentially limit some of the finding's applicability to Wales, where the current model of service is for tests to be returned for processing and interpretation.
- The COM-B model components identified indicate that an individual's capability, opportunity and motivation may all contribute to the decision to self-test for HIV.
- A lack of knowledge about the option to self-test acted as a barrier.
- Clear instructions were described as key to enabling individuals to carry out the test correctly.
- Self-testing was reported to increase autonomy, agency, and self-empowerment.
- The convenience of self-testing strongly influenced the decision to test, specifically in relation to not having to attend a clinic setting and wait for a test.
- Self-testing provided greater privacy and reduced social stigma barriers, however fear of receiving a positive result and fear of stigma or discrimination was also found and may continue to act as a barrier.
- A lack of available post-test counselling or linkage to care following a positive diagnosis acted as a barrier to self-testing.
- The cost of self-testing HIV kits was found to influence uptake with low cost or free tests being preferred.
- Monetary incentives were found to increase willingness to self-test.
- Self-testing was commonly reported to be easy, convenient, and reduce the stress associated with testing in clinics, however mixed results were reported regarding individuals' perceived ability to conduct and interpret the test, and concerns about the potential for partner violence, testing coercion, and disclosure of test results may reduce motivation.
- Scepticism of the accuracy of self-tests was a barrier to uptake.
- The painless and non-invasive nature of oral-based self-testing improved motivation to self-test, however perceived inaccuracy of oral testing compared to blood-based testing may reduce uptake.

Introduction

Human Immunodeficiency Virus (HIV) continues to be a global health issue, with 39 million people living with HIV globally in 2022 (WHO, 2024). However, access to prevention, diagnosis and the right support and care allows the condition to be managed and, for those infected, to have a near-normal life expectancy (NHS, 2021). Testing for HIV can increase early diagnosis which allows for better treatment options and can reduce transmissions from those who are infected and may otherwise have been unaware of their HIV status (Brunner et al., 2022). In Wales, improving access to prevention and testing has contributed towards a 75% reduction in new diagnoses between 2015 and 2021, and the Welsh Government aim to have no new cases of HIV by 2030 (Welsh Government, 2023).

There is evidence to suggest that a perceived lack of confidentiality or privacy and fear of discrimination has acted as a barrier to HIV testing (DeBlonde et al., 2010; Bolsewicz et al., 2015). However, HIV self-testing kits which have been available on the market across the UK since 2015, allow individuals to test for HIV in the privacy of their own home (PHE, 2015). Currently, in Wales, HIV home testing kits can be ordered online, and the collected sample is posted back to a lab for processing. Results are provided through a phone call or text (Sexual Health Wales, 2023). Given that self-testing is a relatively novel method of testing for HIV, understanding more about the behaviours which determine the use of self-tests could inform the development of interventions to promote uptake.

The COM-B model for behaviour change states that three components, *capability*, *opportunity*, and *motivation*, influence behaviour. The model was developed as a starting point for those designing behaviour change interventions, allowing for the identification of target behaviours (Michie et al., 2014). The theoretical domains framework (TDF) provides a more granular picture of each COM-B component and sets out specific barriers and facilitators that influence behaviour. For instance, capability includes the theoretical domains knowledge and skills, indicating that for an individual to enact a certain behaviour, they may need to know why it is important (knowledge) and have the physical ability to carry out the behaviour (skills) (Michie et al., 2014). The COM-B model has previously been used to understand behavioural determinants across a number of public health priorities. For instance, McDonagh et al. (2018) used the COM-B model to explore which behavioural determinants influence primary care practitioners' and young people's decisions to test for chlamydia.



Figure 1. The COM-B components and associated theoretical domains (Atkins et al., 2017)

The Evidence Service at Public Health Wales were asked to review the evidence around the uptake of HIV self-testing. This agile scope aims to answer one question from that request: What behavioural determinants influence uptake of self-testing for HIV?

Objectives

This scoping review [one of two] aims to answer the following question:

- What behavioural determinants influence uptake of self-testing for HIV?

Methods

Given the broad question and time restraints, this scoping review was limited to only include secondary evidence (systematic reviews, rapid reviews, and scoping reviews) which included reproducible methods of systematic searching, and critical appraisal of the quality of included primary studies.

Data sources: Fourteen reliable evidence sources were searched that adhere to robust systematic review principles¹, along with Medline, PsycInfo, Scopus, Epistemonikos and Google scholar. Resources were searched for published evidence using search terms and strategies designed specifically for each data source.

¹ Follows core systematic review principles: comprehensive and stated search strategy, selection of sources based on objective criteria, assessment of risk of bias of primary sources and/or is a methodology developed by an expert body e.g. NICE. For a full list of sources searched, please refer to Sources searched section of the report.

Searches were conducted using a combination of one or more of the following types of terms (depending on the resource searched):

- HIV self-testing terms e.g.: HIV self testing, HIV self sampling, HIV home testing
- Uptake terms e.g.: uptake, increase, rates, rise,
- Behavioural terms e.g.: behaviour, behavioural determinant, behaviour change, capability, motivation, opportunity, COM-B, acceptability, barrier, facilitator, knowledge, perception, decision, action, intention.

Websites of relevant governmental, healthcare or third sector organisations were also searched for grey literature. Searches were limited to studies published from 2014 onwards. A full search strategy for Medline along with a full list of resources searched is included in appendix A (search appendix).

Study selection: Reviews produced using systematic methodology (including critical appraisal) i.e., systematic reviews, scoping reviews, rapid reviews etc. were assessed for inclusion. Two reviewers independently screened the reviews for relevance at title, abstract and full-text level against the inclusion criteria outlined in table 1.

During the study selection process, reviewers found the definition of self-testing differed among reviews and the terms self-testing/self-sampling were often used to interchangeably to describe both tests where you interpret the results themselves and those where you send them off for diagnosis. Therefore, the decision to include either of these types of self-testing modalities was made, as sometimes it was unclear which model the term self-testing was referring to in the reviews.

Data extraction: Where possible, data reporting relevant characteristics were extracted from the included reviews into a data extraction table (appendix B). A second reviewer checked the extracted data. Disagreements at any stage were resolved through discussion with a third reviewer.

Quality assessment: Reviews were critically appraised independently by two reviewers, with 50% appraised in duplicate. This was undertaken using a quantitative or qualitative appraisal tool as appropriate, developed by the Evidence Service in Public Health Wales. Caveats around quality have been included in the data extraction tables and the potential implications of the quality of the included reviews have been discussed in the findings section of this scope.

Synthesis: In order to identify behavioural determinants, the COM-B model and Theoretical Domains Framework (TDF) (Michie et al., 2014) was used to code the *a priori* themes. Before beginning the coding process, reviewers discussed how each component of the COM-B model might relate to the behavioural determinants of HIV self-testing. For instance, reviewers hypothesised that *Capability* might refer to knowledge of HIV self-testing or the ability to carry out a self-test. Two reviewers then separately coded the results sections of each systematic review using ATLAS.ti. Both authors compared codes and then sorted these into the theoretical domains.

Table 1: Review inclusion criteria

Review question 1:		
What behavioural determinants influence uptake of self-testing for HIV?		
	Include:	Exclude:
Setting	<p>Self-testing conducted in any setting (e.g., home/clinic etc), where people have ordered the test online. .</p> <p>This can include tests that need to be returned to the lab for processing (self-sampling) as well as those that the results are directly given to service user (self-testing)</p>	
Perspective	<p>Adults (16+),</p> <p>But particularly, 35+, heterosexual, any sex.</p> <p>We also particularly interested in returning travellers (for example; truck drivers; those working abroad for long periods and then returning to their home country), and people migrating to UK particularly from countries with higher prevalence and lower testing/Tx).</p> <p>Perspectives of healthcare staff on HIV self-testing;</p>	
Intervention	HIV self-testing (all types – as long as ordered online. To include both self-sampling and self-testing)	
Comparison	N/A	N/A
Evaluation	Qualitative or quantitative methods which explore why individuals do or do not choose to self-test for HIV – specifically what motivates people to order a test, complete the test and report the results.	
Other Study Considerations		
<p>Publication date restricted to 2014 as prior to this HIV testing at home was illegal in the UK. Include systematic reviews, scoping reviews, rapid reviews or reviews of systematic reviews, and guidance. Exclude non-systematic reviews, protocols and primary studies</p>		

Findings

Review Characteristics

Fourteen reviews (13 systematic reviews and one scoping review) met the inclusion criteria for this agile scoping review. Of these, eight were quantitative reviews, five were qualitative and one used mixed methods. Six of the reviews (one quantitative, four qualitative and one mixed methods) included sub-Saharan African studies exclusively. Seven reviews (six quantitative and one qualitative) included primary studies from a range of countries globally. One quantitative systematic review limited inclusion to only countries in the EU/EEA.

The reviews included primary studies published between 1994 and 2022. Included study designs varied with a range of qualitative, quantitative, and mixed methods study designs represented. Not all reviews focused exclusively on self-testing, with some looking at HIV testing more broadly but including a sub-analysis of studies focused on HIV self-testing. The age range of participants was not reported in nine of the reviews. Where it was reported, ages ranged from 10 to 76 years. The reviews covered studies undertaken in a wide range of population groups including: the general population, young people, women, men, long distance truck drivers, professionals, men who have sex with men, healthcare professionals, sex workers, transgender women, pregnant women, providers of HIV services, policy makers, those at high risk of HIV infection, migrants, homeless people, people who use/inject drugs, black and minority ethnic groups, heterosexual couples, students, emergency room patients, voluntary counselling and testing clients, and African fishing communities. Heterosexual couples and long distance truck drivers were two specific populations of interest for this scoping review (as per our inclusion criteria in table 1) and findings for these population groups have been highlighted.

The definitions of what constituted self-testing differed across reviews, and therefore, there were differences in what met each reviews inclusion criteria. Some reviews only included studies where participants tested and interpreted their own test results, whereas some reviews included a wider range of self-testing such as where participants collected the sample themselves then sent the sample off to be interpreted by a service and awaited the results. Some reviews did not specify a definition for self-testing and so it is unclear exactly what type of self-testing methods the reviews included. Similarly, some of the included reviews described how self-tests were conducted, for example, whether they were oral tests or blood based tests, and whether the self-tests were conducted under supervision or unsupervised. Other reviews did not provide this level of detailed information about their included primary studies.

No reviews restricted their inclusion criteria by how a test was accessed (for example, only including studies where HIV self-tests were ordered online) and very few reviews reported this information for the primary studies they did include.

Where descriptions and definitions of HIV self-tests have been reported, we have summarised this information in the data extraction table. We feel these differences are important to highlight, as **what constitutes self-testing differs between the included reviews and may also differ from the current self-testing service model within Wales. This could potentially affect the generalisability of the findings.**

Overall, the majority of reviews were deemed to be of moderate quality. Most reviews outlined a clear aim and objective of their work, and used a suitable search strategy that would identify relevant literature. However, it wasn't always clear if the screening, data extraction and/or critical appraisal was conducted in duplicate. In addition, the majority of reviews failed to discuss quality in the context of the findings, nor discuss the implications of study quality in relation to the certainty of their findings.

For the qualitative reviews, few followed the thematic analysis process described as underpinning their methodology and many failed to provide a description around the methods used to code and develop themes. In addition, researchers did not explore the impact of their roles or perspectives on their research (reflexivity).

Thematic Synthesis

Below we present the findings from thematic synthesis of the reviews. Findings are summarised under the components of the COM-B model and the associated theoretical domain. Findings from reviews that limited inclusion to just OECD countries have also been highlighted separately to determine if the resultant themes were similar or different to evidence coming from studies with unrestricted inclusion criteria in terms of country, or those restricted to sub-Saharan Africa.

Furthermore, findings from populations of specific interest to our stakeholders (over age 35, heterosexual, returning travellers [for example; truck drivers; those working abroad for long periods and then returning to their home country], and people migrating to UK) have also been highlighted where applicable.

Table 2 below provides an overview of the COM-B components and theoretical domains coded for each systematic review.

Table 2. The COM-B components and associated theoretical domains coded for each systematic review

COM-B component	Theoretical domain	Adepoju et al. (2023)	Beckham et al. (2021)	Croxford et al. (2020)*	Figueroa et al. (2015)	Hamilton et al. (2021)	Hlongwa et al. (2019)	Hlongwa et al. (2020)	Magno et al. (2023)	Mekonnen et al. (2024)	Niau et al. (2019)	Qin et al. (2018)	Stevens et al. (2018)	Sharma et al. (2020)	Toms et al. (2020)	Total no. of studies
Capability	Knowledge															5
	Skills															10
Opportunity	Social influences															5
	Environmental context & resources															14
Motivation	Social role & identity															8
	Beliefs about capabilities															5
	Beliefs about consequences															13
	Optimism															2
	Reinforcement															3
	Emotion															10

*This systematic review looks at studies from OECD countries only and may be particularly relevant for the Welsh context

Capability:

Capability refers to an individual's psychological and physical capacity to engage in the activity concerned (Michie et al., 2011). We identified 10 reviews contributing findings to this theme for the following theoretical domains associated with capability: knowledge and skills. Five of the reviews contributing to this theme only included studies from sub-Saharan Africa (Adepoju et al., 2023; Hamilton et al., 2021; Hlongwa et al., 2020; Mekonnen et al., 2024; Njau et al., 2019), whereas four reviews included a range of studies from both OECD and non-OECD countries. (Figueroa et al., 2015; Magno et al., 2022; Qin et al., 2018; Stevens et al., 2018). The final review only included studies from the EU/EEA (Croxford et al., 2020). Due to these differences in study inclusion, generalisability of the findings to Wales may vary, and should be explored further.

Knowledge

Varying levels of awareness of HIV self-testing were reported within the reviews. Four systematic reviews (Croxford et al., 2020; Hamilton et al., 2021; Hlongwa et al., 2020; Qin et al., 2018) identified that some people were unaware that HIV self-testing was an option, which determines whether or not this testing type is used. In one review (Qin et al., 2018) youth populations described how they would have gotten tested sooner had they known about the option to self-test.

Methods to raise awareness were suggested in three reviews (Adepoju et al., 2023; Hlongwa et al., 2020; Qin et al., 2018). This included awareness campaigns, which could be provided in person, at clinics, through information leaflets or through the media (Hlongwa et al., 2020), or online campaigns utilising social media or local celebrities to support awareness (Adepoju et al., 2023). Peer networks, community organizations, and LGBT groups were found to be important for promoting HIV self-testing and encouraging follow-up after testing in one review (Qin et al., 2018).

Skills

In order for self-testing to be feasible, it is important that people have the skills to conduct the test and where necessary, interpret the test results. HIV self-test kits were reported as being easy to use in eight reviews (Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021; Hlongwa et al., 2020; Magno et al., 2022; Njau et al., 2019; Stevens et al., 2018; Qin et al., 2018) with ease and convenience of self-testing being highlighted as a facilitator for increasing uptake. In one review (Njau et al., 2019) participants described how the decision to use self-testing could be influenced by the ease of use specifically in relation to oral-based testing compared to blood-based testing.

Mixed findings were reported across reviews when looking at people's ability to perform and interpret the results of the tests. In two reviews (Croxford et al., 2020; Stevens et al., 2018) participants reported high levels of confidence in interpreting their own self-tests. However, concerns about user error and difficulty interpreting self-tests were reported across six reviews (Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021; Hlongwa et al., 2020; Mekonnen et al., 2024; Njau et al.,

2019). While self-tests were reported to be easy to use in general, some studies included in the reviews did report user errors (Mekonnen et al., 2024; Stevens et al., 2018). Stevens et al. (2018) found that higher education level, test training, younger age, prior history of HIV testing and upper income neighbourhoods were associated with an increased ability to conduct and interpret HIV self-testing. Mekonnen et al. (2024) reported how some participants required assistance or encouragement while performing the self-test and highlighted a lack of assistance while testing as a barrier to uptake.

The instructions provided were found to impact people's ability to successfully perform self-testing. Findings often varied within reviews with some participants reporting that self-testing instructions were easy to understand (Croxford et al., 2020; Hamilton et al., 2021; Stevens et al., 2018) and others suggesting the instructions were confusing and difficult to follow (Hamilton et al 2021; Mekonnen et al., 2024; Njau et al., 2019). Low literacy levels and English not being a participants' first language were factors associated with not understanding the self-testing kit instructions, with even the supporting images provided not being clear enough (Njau et al., 2019).

Three reviews suggested approaches to improve participants' ability to correctly conduct and interpret HIV self-testing (Adepoju et al., 2023, Hlongwa et al 2020; Qin et al., 2020). This included providing live demonstrations or education on how to use self-tests (Hlongwa et al 2020; Qin et al., 2020) as well as providing high quality instructions with local translations (Adepoju et al., 2023; Qin et al 2020). Qin et al. (2020) reported that clear wording, translations, pictorial aids or live demonstrations facilitated the correct use of HIV self-testing kits.

Key considerations

One specific population of interest identified by stakeholders for this review was heterosexual couples. For this theme, HIV self-testing kits were reported to be simple and easy to use by heterosexual couples in Malawi (Qin et al., 2020). No other population groups of interest were identified in this theme.

However, Croxford et al. (2020) included studies only from the EU/EEA, and may therefore be of particular relevance to Wales. They identified two capability behavioural determinants influencing the decision not to self-test for HIV. These were a lack of awareness of self-tests and concern about ability to perform the test. However, ease of use of self-sampling and self-testing methods and clear instructions were identified as facilitating factors.

Opportunity:

Opportunity refers to the factors that lie outside of the individual that make the behaviour possible or prompt it (Michie et al., 2011). We found that all 14 reviews identified theoretical domains associated with opportunity. This included: social influences and environmental context and resources. Seven of the reviews

contributing findings to this theme only included studies from sub-Saharan Africa (Adepoju et al., 2023; Hamilton et al., 2021; Hlongwa et al., 2019; Hlongwa et al., 2020; Mekonnen et al., 2024; Njau et al., 2019; Toms et al., 2020), whereas six reviews included a range of studies from both OECD and non-OECD countries (Beckham et al., 2021; Figueroa et al., 2015; Magno et al., 2022; Qin et al., 2018; Sharma et al., 2020; Stevens et al., 2018). The final review only included studies from the EU/EEA (Croxford et al., 2020). Due to the wide range of included countries, the generalisability of the findings to Wales may vary, and should be explored further.

Social influences

Self-testing for HIV was often reported as preferable as it was associated with a reduction in stigma and discrimination, due to the way in which the test can be carried out in private (Hamilton et al., 2021; Hlongwa et al., 2020; Mekonnen et al., 2024; Njau et al., 2019; Qin et al., 2018). This included potential stigma from being seen at a clinic by acquaintances, but also from health professionals.

Qin et al. (2018) found a strong positive influence by peers and social networks, partners and families on young people's decision to self-test.

Environmental context and resources

HIV self-testing was reported to be a convenient option across 13 reviews (Adepoju et al., 2023; Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021; Hlongwa et al., 2019; Hlongwa et al., 2020; Magno et al., 2022; Mekonnen et al., 2024; Njau et al., 2019; Qin et al., 2018; Sharma et al., 2020; Stevens et al., 2018; Toms et al., 2020). The benefit of increasing the accessibility of HIV self-testing kits was discussed in 11 reviews (Adepoju et al., 2023; Beckham et al., 2021; Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021; Hlongwa et al., 2020; Magno et al., 2022; Mekonnen et al., 2024; Njau et al., 2019; Qin et al., 2018; Toms et al., 2020). Seven reviews suggested that making self-testing more accessible would likely increase uptake by reducing facility-based barriers, such as being unable to attend a clinic, long queues and waiting times, or being uncertain how to access health services (Hamilton et al., 2021; Hlongwa et al., 2019; Hlongwa et al., 2020; Magno et al., 2022; Mekonnen et al., 2024; Njau et al., 2019; Qin et al., 2018).

Having the opportunity to access self-testing kits without needing to attend a healthcare facility was suggested to be more acceptable in six reviews (Adepoju et al., 2023; Beckham et al., 2021; Figueroa et al., 2015; Hlongwa et al., 2020; Qin et al., 2018; Toms et al., 2020). Suggested locations to distribute self-test kits included public places (Adepoju et al., 2023; Qin et al., 2018), such as pharmacies (Adepoju et al., 2023), in stores (Adepoju et al., 2023; Figueroa et al., 2015), vending machines (Qin et al., 2018), bars (Toms et al., 2020), or online (Adepoju et al., 2023; Figueroa et al., 2015), with others preferring self-test kits to be mailed home (Beckham et al., 2021).

The affordability of HIV self-testing was discussed across ten reviews (Adepoju et al., 2023; Beckham et al., 2021; Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021; Mekonnen et al., 2024; Njau et al., 2019; Sharma et al., 2020; Stevens et al.,

2018; Toms et al., 2020). Cost was reported to influence whether or not participants would consider self-testing, with high costs or a lack of free tests being a barrier to uptake and low costs or free tests being a facilitator (Adepoju et al., 2023; Beckham et al., 2021; Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021., Mekonnen et al., 2024; Njau et al., 2019; Sharma et al., 2020; Stevens et al., 2018). Some participants reported being willing to pay for self-test kits although the amounts they were willing to pay varied across reviews and within studies (Adepoju et al., 2023; Beckham et al., 2021; Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021; Sharma et al., 2020; Stevens et al., 2018; Toms et al., 2020). Having the opportunity to access self-tests was also reported to reduce costs associated with needing to attend a clinic in two reviews for example catching the bus (Hlongwa et al., 2020; Njau et al., 2019).

Decisions to self-test were also impacted by the perceived support that would accompany self-testing or lack thereof. Barriers to the uptake of self-testing included a lack of counselling available (Croxford et al., 2020; Hamilton et al 2021; Mekonnen et al., 2024; Njau et al., 2019; Stevens et al., 2018) and difficulty ensuring linkage to care (Hamilton et al 2021; Mekonnen et al., 2024; Toms et al., 2020). The lack of an opportunity to speak to a healthcare professional and discuss the results was also seen as a barrier to self-sampling in one review (Croxford et al., 2020). However, some reviews found mixed opinions on whether counselling would be desired, showing while some wished to have counsellors available pre- or post-test, others preferred to test alone (Beckham et al., 2021; Figueroa et al., 2015). The importance of, and desire for post-test counselling was highlighted in four reviews (Hamilton et al., 2021; Hlongwa et al., 2020; Sharma et al., 2020; Stevens et al., 2018). In one review, self-testing was strongly preferred by participants over clinic-based testing if post-test counselling was available (Sharma et al., 2020).

Three reviews looked at alternative methods to face-to-face counselling to provide support for those self-testing (Hamilton et al., 2021; Hlongwa et al., 2020; Stevens et al., 2018). Telephone counselling was reported to improve participants willingness to self-test (Hamilton et al., 2021), and when participants did not want face-to-face counselling, telephone, text messaging and paper-based counselling information were acceptable (Hlongwa et al., 2020). However, in one review, varying levels of acceptability were reported for the different counselling methods (face-to-face, telephone, internet or anonymous counselling) (Stevens et al., 2018).

Key considerations

One specific population of interest identified by stakeholders for this review was heterosexual couples. For this theme, peer networks and community organisations were found to support the promotion of self-testing and to encourage follow up care after testing in heterosexual couples in Malawi. Another specific population of interest identified by stakeholders for this review was truck drivers. For this theme, truck drivers who had testing experience reported preferring telephone counselling while those who had not tested before preferred clinic-based testing (Hamilton et al., 2021). In contrast, another review identified that truck drivers reported in-person

counselling was preferred over telephone counselling. However, those who had not tested before preferred telephone counselling (Sharma et al., 2020). Cost was also seen as a factor influencing the decision to self-test in truck drivers (Hamilton et al., 2021; Sharma et al., 2020) with free tests being preferred.

Croxford et al. (2020) included studies only from the EU/EEA, and therefore may be of particular relevance to the Welsh context. Opportunity related behavioural determinants influencing the decision to self-test for HIV were described as the location, convenience, and cost of the test. Barriers to self-sampling and self-testing included the lack of post-test support available.

Motivation:

Motivation refers to the reflective or automatic processes that lead an individual to enact or not enact a behaviour (Michie et al., 2014). We found that all 14 reviews identified theoretical domains associated with motivation. This included: social role and identity; beliefs about capabilities; beliefs about consequences; optimism; reinforcement, and emotion. Seven of the reviews contributing findings to this theme only included studies from sub-Saharan Africa (Adepoju et al., 2023; Hamilton et al., 2021; Hlongwa et al., 2019; Hlongwa et al., 2020; Mekonnen et al., 2024; Njau et al., 2019; Toms et al., 2020), whereas six reviews included a range of studies from both OECD and non-OECD countries (Beckham et al., 2021; Figueroa et al., 2015; Magno et al., 2022; Qin et al., 2018; Sharma et al., 2020; Stevens et al., 2018). The final review only included studies from the EU/EEA (Croxford et al., 2020). Due to the wide range of included countries, the generalisability of the findings to Wales may vary, and should be explored further.

Social role and identity

HIV self-testing was linked with increased autonomy, agency, and self-empowerment in five systematic reviews (Hamilton et al., 2021; Hlongwa et al., 2019; Mekonnen et al., 2024; Njau et al., 2019; Qin et al., 2018). For women, self-testing was a positive way in which to facilitate partner testing and address power imbalances within the relationship by being able to bring HIV testing into the home (Qin et al., 2018). For men, self-testing was noted as positive for the way in which increased autonomy addressed 'issues of masculinity' (Hlongwa et al., 2019).

Self-testing also enabled individuals to take more responsibility for their sexual health (Mekonnen et al., 2024; Njau et al., 2019; Stevens et al., 2018), with the immediacy of test results allowing for HIV status to be checked before meeting partners. This was described as particularly important for those with multiple partners (Hlongwa et al., 2020). Self-testing was also noted as a way in which to improve testing within couples (Hamilton et al., 2021; Hlongwa et al., 2020; Njau et al., 2019; Qin et al., 2018). However, concerns were raised that self-testing alone might result in denial following a positive test, and failure to seek treatment (Adepoju et al., 2023).

Beliefs about capabilities

High and low perceived self-efficacy to carry out self-testing for HIV were both identified as behavioural determinants in the secondary literature. Three reviews found participants reported concerns about their ability to correctly self-test, when compared with testing in clinic (Croxford et al., 2020; Hlongwa et al., 2020; Mekonnen et al., 2024). However, two reviews found participants reported high levels of confidence in their ability to self-test and interpret results (Hamilton et al., 2021; Stevens et al., 2018).

Beliefs about consequences

A consequence of self-testing raised in two reviews was the fear that a suggestion from one partner to self-test, or a partner's self-test results, could lead to verbal or physical violence amongst couples (Figueroa et al., 2015; Hlongwa et al., 2020; Qin et al., 2018). Self-testing was identified as leading to or having the potential to lead to testing coercion in relationships (Figueroa et al., 2015; Qin et al., 2018; Njau et al., 2019).

In two reviews, self-tests for HIV were described as trustworthy (Hamilton et al., 2021; Stevens et al., 2018). However, scepticism about the accuracy of self-testing kits was also raised as a potential barrier to using self-sampling (Croxford et al., 2020), and self-testing (Figueroa et al., 2015; Hlongwa et al., 2020; Magno et al., 2022; Mekonnen et al., 2024; Njau et al., 2019; Sharma et al., 2020; Stevens et al., 2018). This scepticism was more frequently linked to oral tests in four systematic reviews (Figueroa et al., 2015; Hlongwa et al., 2020; Njau et al., 2019; Sharma et al., 2020). In relation to oral testing, there was concern that individuals may need to take a confirmatory test in a clinic setting to be sure of the result, and there were mixed views about whether individuals would attend a clinic setting due to fears of stigma and privacy (Hlongwa et al., 2020). The possibility of fake self-tests was also raised as a concern about the quality of self-test kits which may act as a barrier to uptake (Njau et al., 2019).

Confidentiality and privacy concerns were described in three reviews. In one review (Croxford et al., 2020), barriers to self-sampling included concerns about confidentiality and privacy. In two reviews concerns about self-testing mainly involved fear that HIV status could be disclosed (Hamilton et al., 2021; Mekonnen et al., 2024). However, increased privacy and confidentiality were more likely to be seen as positive behavioural determinants influencing the decision to self-test for HIV (Adepoju et al., 2023; Croxford et al., 2020; Figueroa et al., 2015; Hamilton et al., 2021; Hlongwa et al., 2019; Hlongwa et al., 2020; Magno et al., 2022; Mekonnen et al., 2024; Njau et al., 2019; Stevens et al., 2019; Toms et al., 2020).

Optimism

In two systematic reviews, motivations to self-test for HIV included being able to initiate and access treatment and consequently live longer (Adepoju et al., 2023; Hamilton et al., 2021).

Reinforcement

Monetary incentives were shown to increase willingness to self-test in two systematic reviews (Beckham et al., 2021; Mekonnen et al., 2024) with one review highlighting that willingness increased with any amount of monetary incentive offered (Beckham et al., 2021).

Emotion

A range of behavioural determinants under the theoretical domain 'emotion' were identified. Behavioural determinants influencing the decision to use self-tests included the way in which it was viewed as a low stress experience in contrast to HIV testing in clinics (Qin et al., 2018; Toms et al., 2020). **Oral self-testing was also preferable as it was perceived as painless and non-invasive (Figueroa et al., 2015; Mekonnen et al., 2024; Njau et al., 2019; Stevens et al., 2018).**

Behavioural determinants identified as influencing the decision not to self-test for HIV included fear. Firstly, fear about taking the test and receiving a positive result (Magno et al., 2022; Njau et al., 2019). Secondly, participants were fearful of receiving a positive test without counselling or other support (Croxford et al., 2020; Hamilton et al., 2021; Hlongwa et al., 2020; Mekonnen et al., 2024; Njau et al., 2021). Finally, fear of stigma or discrimination following a positive HIV diagnosis was identified as a barrier to self-testing (Mekonnen et al., 2024) and self-sampling (Croxford et al., 2020).

Key considerations

One specific population of interest identified by stakeholders for this review was heterosexuals. Amongst heterosexual couples, Qin et al. (2018) found that self-testing enabled women in Malawi to encourage their husbands to test for HIV after they had previously declined to test in a clinic setting. However, Qin et al. (2018) also found that women had been pressured by their husbands to self-test in Malawi.

Croxford et al. (2020) included studies only from the EU/EEA and is therefore likely to be of particular relevance to the Welsh context. The identified motivational factors which were described as influencing the decision *not* to self-test using self-test kits with immediate results for HIV included: low self-efficacy to self-test, and fear of receiving a positive test without counselling or other support. Motivational factors influencing the decision *not* to self-test using self-sampling methods included: scepticism of accuracy of self-sampling kits, fear that HIV status could be disclosed, fear of stigma or discrimination following a positive HIV diagnosis, and a lack of opportunity to discuss results with a healthcare professional. However, increased privacy and confidentiality of self-tests was identified as a motivating factor to carry out a self-test.

Discussion

The findings from our thematic synthesis of reviews highlights that several behavioural determinants influence self-testing behaviour. COM-B model components identified indicate that **an individual's capability, opportunity and motivation may all contribute to the decision to self-test for HIV**. Linked to these components, ten theoretical domains were coded, which have provided further insight into the behavioural determinants influencing decision-making around HIV self-testing.

Firstly, under *capability*, we found a **lack of knowledge about HIV self-testing acted as a barrier to self-testing**. Awareness campaigns may play a part in increasing this knowledge. Secondly, whilst we found that self-testing kits were widely described as easy to use, a number of systematic reviews reported that difficulties with interpreting test results of rapid tests may act as a barrier to using this specific type of self-testing kit. **Clear instructions were described as key to enabling individuals to carry out the test**. Being able to access assistance to carry out and interpret the test (if applicable) may also be beneficial.

An individual's *opportunities* may determine whether they self-test for HIV. This includes social influences, where it was reported that being able to avoid testing in a clinic setting was associated with a reduction in potential stigma from acquaintances, and also from health professionals. The most commonly coded theoretical domain was 'environmental context & resources', coded in all fourteen papers. We found that **the convenience of self-tests strongly influenced the decision to test, specifically in relation to the time saved by not having to attend a clinic setting and wait for a test**. However, the cost of a testing kit may act as a barrier to this method of HIV testing, although self-testing was also described as cost-effective in some instances, as it meant that money was saved on travelling to the clinic for testing. **A significant barrier to self-testing was reported as a lack of counselling or linkage to care following a positive diagnosis**, although opinions differed as to the method of counselling required and when it should take place, suggesting the need for a tailored service.

Finally, *motivational* factors were identified as playing a part in an individual's decision to self-test for HIV. Self-testing was seen as a low stress and painless method of HIV testing. For some, self-testing meant they would be able to access treatment faster, and as a result, live longer. Self-testing was also linked with increased autonomy and agency, with the potential to improve HIV testing between couples. However, there were also fears that self-testing could lead to coercion amongst couples and lead to physical or verbal violence in the case of a positive result. These findings reinforce the need for access to counselling and support alongside self-testing. **Scepticism about the accuracy of self-tests was a common theme across the systematic reviews, as well as concerns that positive results could be disclosed in some way**. Fears were expressed about increased stigma, but also that individuals may be at increased risk of suicide after a positive test, particularly if no counselling was available. There was evidence to suggest that both high and low

self-efficacy may influence the decision to use a self-testing kit, echoing the need for access to assistance and encouragement to take the test, identified under *capability*. There was limited evidence suggesting that financial reimbursement may act as a facilitator to self-test.

When looking at the different types of self-testing kits available, preferences were found to vary across reviews. The majority of included reviews that reported preferences suggested that participants preferred oral-based self-testing over blood-based testing as they were perceived to be less invasive and painless. However, determining which testing type was preferred was not the focus of this agile scope or of the included reviews, and as such further evidence would be needed to confirm this.

OECD specific findings

The limited findings from OECD countries have shown that *capability, opportunity and motivational* factors may all influence the decision to self-test for HIV. Awareness raising of HIV self-testing methods may still be required, as well as support to perform the test. Cost and location of the test may also be influential, and post-test support was found to be important. **Amongst those living in OECD countries, information about the accuracy of self-tests may be beneficial.** Despite the novel method of testing, there remain concerns about whether HIV status could be disclosed, and fear of stigma following a positive test. However, increased privacy and confidentiality were also described as positive aspects of self-testing.

Populations of interest

The limited findings from specific populations of interest have shown that capability, opportunity and motivations factors may all influence the decision to self-test for HIV. Heterosexual couples found self-testing kits to be easy to use and the accessibility of self-tests was found to be influential with men being more willing to use to a self-test instead of attending a clinic, especially if their female partners could access the test for them. Peer networks and community organisations may also influence uptake in heterosexual couples. For truck drivers, cost was found to be influential and the delivery method of post-test support was also found to be important.

Limitations

This scoping review has several limitations. Firstly, there were different definitions of self-testing across the included reviews. These included both tests that were sent off for further analysis and those that gave instant results. In Wales, the current self-testing model involves requesting a test online, conducting it at home and posting the completed test. Results are then sent by phone call or text and a clinic appointment is offered when required. Due to the variety of self-testing models described across the reviews, some findings may not be relevant for the Welsh-

context. Furthermore, whilst a distinction was sometimes made between oral and blood HIV self-tests, this was not always the case. Therefore, it was not always clear whether participants' responses were in relation to blood or oral testing. We found limited evidence from OECD countries, with the majority of evidence coming from studies focussed within sub-Saharan Africa. Consequently, findings may not be transferrable to the Welsh context. We have also not explored the overlap of primary studies across the systematic reviews. Therefore, it is possible that some evidence may have been described more than once.

Conclusions

Capability, opportunity and motivation may all act as behavioural determinants which influence the decision to self-test for HIV. Self-testing was widely seen as convenient, easy to use, empowering, private and as way in which to reduce stigma. However, those designing interventions to promote uptake of self-testing may need to consider increasing awareness of this method of HIV testing, along with providing information about its accuracy. Furthermore, access to assistance to carry out the test and post-test support were identified as important for some. Despite the novel method of testing, concerns around privacy of test results and stigma associated with a positive test result also remain, and these fears may still need to be addressed. Further research may be required to look at behavioural determinants influencing the decision to use the specific self-testing model which is in operation in Wales.

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[aids#:~:text=Globally%2C%2039.0%20million%20%5B33.1%E2%80%93,considerabl
y%20between%20countries%20and%20regions](#)

Appendix A: Search Appendix

Table X: Resources to be searched	
Cochrane database of systematic reviews	Date of search: 01/05/2024
NICE: National Institute for Health and Care Excellence	Date of search: 01/05/2024
Joanna Briggs Institute	Date of search: 01/05/2024
National Institute for Health Research (NIHR) Public Health Research	Date of search: 01/05/2024
The Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre)	Date of search: 01/05/2024
Campbell Collaboration systematic reviews	Date of search: 01/05/2024
What Works for Wellbeing	Date of search: 01/05/2024
Health Technology Wales	Date of search: 01/05/2024
Health Information and Quality Authority (Ireland)	Date of search: 01/05/2024
National Institute for Health Research: Health Technology Assessment Journal	Date of search: 01/05/2024
Agency for Healthcare Research and Quality (AHRQ)	Date of search: 01/05/2024
Canada's Drug and Health Technology Agency	Date of search: 01/05/2024
Evidence Synthesis Program Reports (va.gov)	Date of search: 01/05/2024

Scottish Intercollegiate Guidelines Network (SIGN) clinical guidelines	Date of search: 01/05/2024
Google Scholar	Date of search: 20/05/2024
Epistemonikos	Date of search: 21/05/2024
Scopus	Date of search: 24/05/2024
Medline	Date of search: 24/05/2024
PsycInfo	Date of search: 24/05/2024
Grey literature sources to search:	
Terrence Higgins Trust	Date of search: 20/05/2024
UKHSA/PHE	Date of search: 20/05/2024
Welsh Government	Date of search: 21/05/2024
UK Government	Date of search: 21/05/2024
Public Health Scotland	Date of search: 21/05/2024
Public Health Agency (Northern Ireland)	Date of search: 21/05/2024
Institute of Public Health (Ireland)	Date of search: 21/05/2024

Medline Search Strategy:

1

("HIV self-test*" or "HIV self test*" or "HIVST" or "HIV self-test* kit*" or "HIV test* kit*" or "HIV kit*" or "HIV online test*" or "HIV post* test*" or "HIV mail* test*" or "HIV home-test*" or "HIV home test*").ti,ab.

2

((HIV adj3 "self-sampling kit*") or (HIV adj3 "self-test*")).ti,ab.

3

exp HIV Testing/

4

exp HIV/

5

exp Self-Testing/

6

("self-test* uptake*" or "self-test* increase*" or "self-test* rise" or "self test*" or "acceptan*" or "uptake*" or "increas*").ti,ab.

7

("behav*" or "behav* determinant*" or "behavio?r change*" or "capabilit*" or "motivatio*" or "opportunit*" or "COM-B" or "COM-B model*" or "acceptabilit*" or "barrier*" or "facilitator*" or "knowledg*" or "perception*" or "decis*" or "action*" or "intention*").ti,ab.

8

(behav* adj3 chang*).ti,ab.

9

exp Health Behavior/

10

systematic review*.ti. or systematic review.pt. or review.pt. or guideline.pt.

11

1 or 2 or 3 or 4

12

5 or 6

13

7 or 8 or 9

14

10 and 11 and 12 and 13

15

limit 14 to yr="2014 -Current"

Appendix B: Data extraction

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
<p>Adepoju, V. A. et al. (2023) Acceptability and strategies for enhancing uptake of human immunodeficiency virus self-testing in Nigeria. World Journal of methodology. 13 (3), pp 127-141.</p> <p>Mixed methods (narrative & content analysis)</p> <p>Publication dates: 2015 to 2022.</p>	<p>To review the acceptability and strategies for enhancing the uptake of HIV self-testing in Nigeria.</p>	<p>18 studies included.</p> <p>(descriptive cross-sectional [77.80%], retrospective cross sectional [5.56%], discrete choice experiment [5.56%], quasi-experimental [5.56%] and cohort [5.56%]).</p> <p>Nigeria only.</p> <p>Publication dates: 2015 to 2022.</p>	<p>Age range not reported in all studies, but where it was, between 10 and 59 years of age.</p> <p>Population groups:</p> <ul style="list-style-type: none"> • Majority conducted in young people (10-24 yrs) • female sex workers • general population • Male long distance truck drivers • MSM • university students, • pregnant women • Women <ul style="list-style-type: none"> • patient and proprietary medicine vendors and 	<p>No definition of self-test given.</p> <p>Authors refer to the Federal Ministry of Health guidance for operational guidance on the delivery of HIVST in Nigeria which outlines the different service delivery and distribution methods - not checked</p> <p>No description provided in SR on how self-tests were accessed.</p>	<ul style="list-style-type: none"> • Acceptability of HIVST in Nigeria • Existing regulatory context for HIVST • Uptake of HIVST and linkage to care services • Strategies for enhancing uptake of HIVST in Nigeria 	<p>None reported</p>	<p>Diverse range of populations included and country may limit generalisability</p> <p>CASP tool used to assess quality of included studies, but this has not formed part of the results or discussion. No information on QA included.</p> <p>The following concerns were identified from critical appraisal:</p> <p>Methods section generally poorly reported making it difficult to establish how selection of studies was conducted (i.e. in duplicate) and inclusion criteria unclear.</p>

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
			community pharmacists <ul style="list-style-type: none"> • Professionals • Health providers/workers, key opinion leaders/policy makers/advocated <p>No information on sample sizes.</p>				
Beckham, S.W. et al. (2021) Eliciting Preferences for HIV Prevention Technologies: A Systematic Review. The Patient. 14 (2) pp.151-174. Quantitative (narrative)	To summarise the current literature in HIV prevention technologies and application of quantitative preference elicitation methods to HIV-related topics and identify methodological norms.	84 primary studies included. Study design not reported, but all quantitative. Conducted in sub-Saharan Africa (SSA) (45, 54%) and North America (30, 36%). There were ten (12%) in Latin America and the Caribbean, ten (12%) in Asia (six in Thailand), and	Age range not reported. Population groups: <ul style="list-style-type: none"> • Cisgender male • Female • General population • Key populations at high risk for HIV (included in around half of studies) • Transgender • Healthcare workers 	Specific to self-testing (n=15) HIV self-test described as fluid sampling method using oral or blood method. No specific description provided on how self-test was accessed.	<ul style="list-style-type: none"> • willingness • self-test product design preference (oral vs blood, combining TSI testing) • Service design preference (location, provider, counselling support, cost) 	Potential to have missed relevant studies as only include peer-reviewed literature.	As the majority of included studies were conducted in sub-Saharan Africa and Asia, with only 7% (n=6) studies conducted in UK and Ukraine, this may limit generalisability. PREFS checklist and adapted version of the NOS used for quality assessment. Study quality discussed in the results in isolation. The following concerns were identified from critical appraisal: Conflicts of interest declared by authors.

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
		only six (7%) in Europe (UK and Ukraine only). Publication dates: 1998 to 2020	Total sample size ranged between 26 and 7,176 participants.				
Croxford, S. et al. (2020) HIV testing strategies outside of health care settings in the European Union (EU)/European Economic Area (EEA): a systematic review to inform European Centre for Disease Prevention and Control guidance. HIV Medicine. 21 (3), pp. 142-162 Quantitative (narrative)	To synthesize the evidence on strategies aimed at increasing the uptake and coverage of HIV testing outside of health care settings in the European Union /European Economic Area, and document barriers to testing across all settings.	80 studies included overall. Study designs were not reported. Majority conducted in Northern Europe (n = 37), Southern Europe (n = 27) and Western Europe (n = 12). Four studies were set across multiple EU/EEA countries. The most common country of study was the UK (n = 34), followed by	Age range not reported Population groups: • General population • Groups at higher risk of HIV (migrants, MSM, homeless, sex workers, people who use/inject drugs, black and minority ethnic groups, young people, other risk groups not specified). Total sample sizes ranged between 12 and 411,632	Twelve studies looked at HIV self-sampling (oral-fluid n=7, blood sample n=6). Six studies provided self-testing (oral-fluid n=3, blood sample n=3). Self-testing not described in detail but as oral-fluid and blood. No specific description provided on how self-test was accessed.	<ul style="list-style-type: none"> • Acceptability • easy to do • easy to interpret • recommend to friend or family member • ability to interpret results correctly • purchase price 	Authors comment on difficulty in comparing findings across studies, inconsistent reporting of HIV testing outcomes measures. No studies looked at HIV incidence/prevalence and few measured baseline testing rates making it impossible to assess the intervention effectiveness in testing rates.	<p>Critical appraisal conducted using the NICE checklist and the AXIS quality assessment tool. 29 (73%) studies were rated as high quality, eight (20%) as medium quality and three (7%) as low quality. Risk of bias was considered low in 20 studies (50%), medium in 19 (48%) and high in one study (2%).</p> <p>Studies were specific to EU populations, and the most common country of study was the UK (n=34) and included relevant populations, making it likely that findings are generalisable to the UK.</p> <p>No specific concerns were identified from critical appraisal:</p>

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
		Spain (n = 16) and France (n = 7). Publication dates: 2010 to 2017	participants (self-testing 47-5,908 participants; self-sampling 150-411,632 participants).				
Figuroa, C. et al. (2015) Attitudes and Acceptability on HIV Self-testing Among Key Populations: A Literature Review. AIDS & Behaviour. 19 (11) pp. 1949-65 Quantitative (narrative) (although note it mentions content analysis in the methods but results reported narratively)	This review focuses on the acceptability, values and preferences of key populations on HIV self-testing.	23 studies included. Mix of cross-sectional, cohort and qualitative studies. One RCT included. Eighteen studies (78.3 %) conducted in high-income countries, four (17.4 %) in middle-income countries and one (4.3 %) from a low-income country. None undertaken in the UK alone (one across multiple countries	Age ranged from 13 to 76 years. Population groups: • Female sex workers • MSM • People who inject drugs • Transgender women. Total sample sizes ranged between 27 and 5,908 participants.	Oral fluid-based HIV RDTs (n=13), Fingerstick/whole blood-based HIV RDTs (n=5), Both types of HIV RDTs (n=3) No information on the type of specimen collection used (n=2). No specific description provided on how self-test was accessed. Nine studies used an unsupervised approach, seven used a supervised approach, six did	<ul style="list-style-type: none"> • Values • Preferences • Acceptability • Benefits • Willingness to pay • Concerns • Linkage to care • Adverse events 	Authors note concerns over selection bias, including sample representativeness and non-response rates. In addition, study designs, characteristics and sample sizes were heterogeneous, and results may not be generalizable. Finally, authors reported most studies had incomplete reporting of data items and low compliance with the STROBE reporting checklist.	<p>Critical appraisal conducted using the STROBE checklist. Eighteen studies scored above 50%, and three below 50%. Two had no scores assigned to them and one study had n/a in the quality score column of the characteristics table.</p> <p>Majority of studies were conducted in high income countries (n=18, 78.3%), with only one study (4.3%) conducted in a low income country. All studies included MSM, and other population groups only represented in one study (apart from female sex workers n=3 studies). No studies included people in prison. Generalisability to Wales, and other key population groups should be considered further.</p> <p>The following concerns were identified from critical appraisal: The implications of the quality</p>

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
		including the UK). Publication dates: 1995 to 2014		not report this information and one compared both approaches. Studies examining home specimen collection kits were excluded as participants did not interpret their test result.			assessment are not considered by the authors and quality is not discussed in the conclusions. Individual study quality was assessed using STROBE and CONSORT which are reporting guidelines rather than a recognised CA checklist.
Hamilton, A. et al. (2021) HIV Self-Testing Uptake and Intervention Strategies Among Men in Sub-Saharan Africa: A Systematic Review. <i>Frontiers in public health</i> . 9 (0), pp.594298 Quantitative (narrative)	To examine HIV self-testing uptake and intervention strategies among Men in Sub-Saharan Africa.	63 studies included. 37 discussed HIVST uptake/acceptability and 24 discussed intervention strategies. Variety of included study designs. Sub-Saharan Africa (14 countries represented) Publication	Age ranges in the included studies not reported by SR, but inclusion criteria is studies among men aged Age 16 years or older. Population groups: • co-habiting couples • men and/or women • pregnant women and partners • sex workers • students	In HIVST an individual can use a kit to collect a specimen, perform the test (usually a rapid diagnostic test) which screens for HIV-1/2 antibodies or the HIV-1 p24 antigen, and interpret the test results for themselves. A positive result requires confirmatory testing at a clinical facility	• Knowledge • Acceptability and benefits • Willingness to use • Uptake • Barriers	Authors note particular limitations relating to the generalisability of the location of interest, and that only full-text, peer reviewed articles in English language were included.	Critical appraisal was conducted using the CASP qualitative checklist, Cochrane ROB tool for RCTs and the NIH quality assessment tool for observational cohort and cross-sectional studies. No information provided on individual study quality. Note that studies were required to meet certain criteria in the quality assessment in order to be included in the review. Unclear how many articles were excluded for this reason and no discussion why. As focus on Sub-Saharan Africa, findings may not be generalisable to UK

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		dates: 2010 to 2020	<ul style="list-style-type: none"> • truck drivers. • young people • healthcare providers • key stakeholders <p>Total sample sizes ranged between 12 and 424,731. One study did not specify sample size.</p>	<p>which allows for more accurate diagnoses as well as for those persons to easily become linked to ART.</p> <p>No specific description provided on how self-test was accessed.</p>			
Hlongwa, M. et al. (2019) Mapping evidence of intervention strategies to improving men's uptake to HIV testing services in sub-Saharan Africa: A systematic scoping review. BMC Infectious Diseases. 19 (1) pp.496	To map evidence on the intervention strategies to improve HIV uptake among men in sub-Saharan Africa.	<p>24 studies included.</p> <p>Qualitative, quantitative and mixed methods studies were included (including two RCTs and one systematic review).</p> <p>Sub-Saharan Africa (ten countries represented).</p> <p>Publication</p>	<p>Age ranges in the included studies not reported by SR but inclusion criteria was 15 years and over.</p> <p>Population groups:</p> <ul style="list-style-type: none"> • Men and/or women • Specific population subgroups not described. <p>Total sample sizes ranged between 15 and</p>	<p>Self-testing (n=4) analysed separately.</p> <p>HIV self-testing was not defined.</p> <p>No specific description provided on how self-test was accessed.</p>	<ul style="list-style-type: none"> • perceptions • barriers and facilitators 	Searching limitations were described by authors	<p>Mixed Method Appraisal Tool (MMAT) version 2018 was used to assess study quality. Authors considered the overall evidence to have minimal risk of bias. Quality of included studies was not discussed in the findings.</p> <p>As focus on Sub-Saharan Africa, findings may not be generalisable to UK</p> <p>The following concerns were identified from critical appraisal:</p> <p>Thematic analysis was not performed as indicated in the methods and no reflexivity was considered.</p>

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Qualitative (thematic synthesis)		dates: 2005 to 2018.	765,087 (patient records). Two studies did not specify sample size.				
Hlongwa, M. et al. (2020) Men's perspectives on HIV self-testing in sub-Saharan Africa: a systematic review and meta-synthesis. BMC Public Health. 20 (1), pp.66 Qualitative (thematic synthesis)	To synthesise evidence on men's perspectives regarding HIVST in sub-Saharan Africa.	16 studies included. Qualitative and mixed methods studies were included. Sub-Saharan Africa (eight countries represented). Publication dates: 2005 to 2019. 94% published from 2015 onwards.	Age ranged between 15 and 49 years were reported. Age was often reported as a mean. Population groups: • Predominantly men, but women also included in some studies. • Predominantly users of HIVST • Academics and Government officials • Healthcare providers. Total sample sizes ranged between 20 and 1,617.	Multiple testing was included, 22.1% reported findings on self-tests. HIV self-testing enables individuals to conduct and interpret their own HIV tests at their own convenient time and in a private space. HIVST can be administered orally (using saliva) or through finger-pricking (drawing of blood). Individuals administer HIVST with little or no training, although written instructions and	<ul style="list-style-type: none"> • Knowledge • acceptability • need for counselling • confidentiality • convenience • accuracy 	Authors note that they included studies conducted in countries in SSA that are not implementing the HIVST initiative, however, these are not likely to have influenced findings because similar patterns of men's perspectives on HIVST were observed across all the included studies conducted in different countries. Given that only a handful of studies met the inclusion criteria, the authors caution that the findings of this review may not be generalised across all men in SSA.	Mixed Method Appraisal Tool (MMAT) version 2018 was used to assess study quality. All studies found to be of high quality (100%), except one study which scored 86%. Quality of included studies was not discussed in the findings. As focus on Sub-Saharan Africa, findings may not be generalisable to UK. The following concerns were identified from critical appraisal: The majority of quotes were from a few studies, although a single quote was included from the majority of studies.

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				warnings are provided with the kit.			
Magno, L. et al. (2023) HIV Testing Strategies, Types of Tests, and Uptake by Men Who have Sex with Men and Transgender Women: A Systematic Review and Meta-analysis. <i>AIDS & Behaviour</i> . 27 (2), pp. 678-707 Quantitative (meta-analysis)	Investigating the effectiveness of strategies and types of tests on HIV testing uptake by men who have sex with men (MSM) and transgender women (TGW), and in reaching people living with HIV (PLWH).	263 articles included. 94.7% (n = 249) used quantitative study design (mostly cross-sectional), while 5.3% (n = 14) used mixed methods. Forty eight countries were included, the majority from USA (27.8%), and 52.1% (n=137) were conducted in high income countries. Publication dates: 1994 to 2020	Age range not reported. Population groups: • MSM • Transgender women. Total sample sizes ranged between 10 and 49,617 participants.	HIV self-testing was not defined. No specific description provided on how self-test was accessed.	<ul style="list-style-type: none"> • barriers and facilitators associated with testing • barriers and facilitators associated with not testing 	<p>Authors note that findings were reported in a way that made it difficult to stratify analyses by population type. They also report that the differences observed in uptake among WHO regions could be affected by the fact that the tests used in studies changed over time.</p> <p>Authors also reported common biases associated with included studies and cautioned over the high heterogeneity between studies in the meta-analyses.</p>	<p>Meta analysis of findings relevant to Q2, narrative synthesis of findings more relevant to Q1.</p> <p>Quality assessment was conducted using the JBI checklist.</p> <p>Range of countries included majority from USA. Generalisability to Wales needs to be explored further.</p> <p>The following concerns were identified from critical appraisal:</p> <p>Inclusion/exclusion criteria for the review not explicitly stated.</p> <p>No discussion of the potential role of publication bias.</p>
Mekonnen, H. et al. (2024) <i>Advances in HIV self-testing:</i>	Compile and synthesize evidence about HIV	16 articles included. Mix of	Age range not reported.	HIVST is a primary test that requires further testing by a	<ul style="list-style-type: none"> • Opportunities for HIVST • Barriers to HIVST 	Authors described limitations to the included research such as the lack of	The CASP checklist was used to assess the quality of qualitative studies, the Cochrane Risk of Bias Tool was used for RCTs, and

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<p>Systematic review of current developments and the road ahead in high-burden countries of Africa. SAGE Open Medicine. 12 (0) pp. 2050312123122 0788</p> <p>Quantitative (narrative)</p>	<p>self-testing technologies, strategies, and uptake in the top-10 high HIV burden countries of Africa.</p>	<p>quantitative, qualitative and mix methods study including 2 RCTs.</p> <p>Sub-Saharan Africa (five countries represented)</p> <p>Publication dates: 2012 to 2022</p>	<p>Populations groups:</p> <ul style="list-style-type: none"> • Men and women • pregnant women • people receiving antenatal care • university students • stakeholders and policy makers <p>Total sample sizes ranged between 12 and 31,385.</p>	<p>trained health worker to provide a definitive HIV-positive diagnosis. An individual uses a kit (usually a rapid diagnostic test) to collect a specimen, perform the test and interpret the test results for themselves which screens for HIV-1/2 antibodies or the HIV-1 p24 antigen.</p>		<p>studies fully representing the diverse range of countries included within Sub-Saharan Africa.</p>	<p>although unclear which tool was used for observational cohort and cross-sectional studies, this was undertaken. However, studies had to meet a certain score of criterion before being included in the systematic review, which may bias findings.</p> <p>As focus on Sub-Saharan Africa, findings may not be generalisable to UK</p> <p>The following concerns were identified from critical appraisal:</p> <p>Does not mention if study selection process, DE or CA undertaken in duplicate or consistency checked.</p> <p>Authors do not report the individual quality scores of each included study. Authors also did not discuss quality when forming their findings/conclusions, however they did only include studies which met a certain quality standard on CA.</p> <p>No discussion of potential publication bias.</p>

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
<p>Njau, B et al. (2019) A systematic review of qualitative evidence on factors enabling and deterring uptake of HIV self-testing in Africa. BMC Public Health. 19 (1) pp. 1289</p> <p>Qualitative (thematic synthesis)</p>	<p>explore HIV stakeholder's perceptions about factors that enable or deter the uptake of HIV self-testing and experiences of self-testing of adult users in Africa.</p>	<p>9 articles included.</p> <p>Qualitative studies.</p> <p>Sub-Saharan Africa (5 countries were represented)</p> <p>Publication dates: 2011 to 2017</p>	<p>Age ranged from 15 years and older (upper age not reported).</p> <p>Population groups:</p> <ul style="list-style-type: none"> • males and females or mixed sex samples • Actual and potential HIVST users • Pregnant women attending antenatal clinics and their male partners. • HIV stakeholders • Healthcare providers <p>Total sample sizes ranged between 12 and 150.</p>	<p>HIVST includes: finger prick test and oraQuick test (oral test). The finger prick self-test prototype comprises of a bag with a test cassette, diluent vial, disinfectant wipe, compression swab, lancet, sampler stick, dressing and manufacturer's instruction for use.</p> <p>In brief, a drop of blood collected by a sampler stick is placed into the test cassette, and two drops of diluent are added before reading of the results after waiting for 10 min. The Ora Quick® rapid HIV 1/2 antibody</p>	<ul style="list-style-type: none"> • Facilitators (availability, Stigma and discrimination, confidentiality of HIV test results, Perceived autonomy and self-empowerment, Perceived convenience of self-testing, Couples HIVST and disclosure of HIV serostatus) • Barriers to HIVST (affordability, perceived unreliability, low literacy, fear of positive result, concerns, human rights issues, lack of linkage to care/counselling, lack of effective regulation, perception of quality of test, self-testing experiences, 	<p>Authors highlight that not all the barriers, facilitators are actual users' experiences relating to HIVST as majority of studies reported view of stakeholders reflecting the theoretical use of HIVST, not the actual practice of testing amongst users.</p>	<p>Quality assessment was undertaken using the CASP tool. No studies assessed to be of high quality because of the lack of information regarding the relationship between researchers and participants. All studies categorised as moderate quality.</p> <p>Authors also assessed the certainty of evidence using GRADE-CERQual. Most findings assessed as moderate confidence.</p> <p>The following points were identified from CA of the SR:</p> <p>No discussion of reflexivity from authors of the SR – authors do highlight that this was not discussed in the primary studies.</p> <p>All studies undertaken in Africa. Generalisability to Wales should be considered further.</p>

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				<p>test (OraSure Technologies, Bethlehem, PA, USA) is the first WHO prequalified HIVST kit. The Ora Quick® rapid HIV 1/2 antibody test is a lateral-flow, immunochromatographic, second-generation, oral-fluid assay detecting antibodies to HIV-1 and HIV-2. The Ora Quick test kits consist of two pouches; one contains a diluent tube and the second contains the test device and instruction for use. An oral fluid swab collected using the flat-pad of the test device from upper and lower gums is placed</p>			

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
				into a pre-filled tube of reagent for 20 min before reading the results.			
Qin, Y. et al. (2018) Experiences using and organizing HIV self-testing: A global qualitative systematic review. AIDS. 32 (3), pp. 371-381 Qualitative (thematic synthesis)	This qualitative systematic review aims to appraise and synthesize research evidence on experiences using and organizing HIVST.	18 studies included Qualitative studies only. USA (n=8), UK (n=1), Ethiopia (n=1), Malawi (n=3), South Africa (n=1), Canada (n=1), Kenya (n=1), India (n=1). One study also conducted across Kenya, Malawi, and South Africa. Publication dates: 2010 to 2017	Age range not reported. Population groups - Majority focussed on adults (n=15), but three focussed on youths. Specific groups included transgender, MSM, healthcare workers, pregnant women, heterosexual couples, students, lay users who never previously self-tested, and stakeholders involved in using, offering or implementing self-testing. Total sample sizes ranged	Uses WHO definition for HIVST: an individual collecting their own test specimen, performing an HIV test, and interpreting the result. No specific description provided on how self-test was accessed.	<ul style="list-style-type: none"> • HIVST increased capacity to reach priority populations; • HIVST provides expanded opportunities for service delivery; and • social and ethical considerations for implementation and scale-up of HIVST. 	Authors report evidence gaps as limitations.	<p>The CASP tool was used to assess study quality and the confidence in review findings was assessed using CERQual. Most studies were assessed to be high or medium quality with only one assessed as being low quality.</p> <p>Majority of studies (n=17) report experiences using HIVST, however one reported experience organizing HIVST.</p> <p>Range of countries and populations included in the review which could have implications for generalisability to the Welsh context. Majority are USA with one UK study.</p> <p>Authors report the fact that the majority of studies included heterosexual couples, MSM and transgender individuals from high-income countries as a limitation, but this may improve generalisability to UK.</p>

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
			between 8 and 906. Studies containing higher participant numbers were among healthcare workers.				<p>The following concerns were identified from critical appraisal:</p> <p>No discussion of reflexivity – authors do not explore the impact of their roles/perspectives on the research and do not try to manage this impact.</p> <p>The researchers used GRADE CERQUAL to assess the confidence in each review finding. All our assessed as high/moderate confidence in the evidence. Explanation is given in the table, however the quality is not really discussed in the narrative or considered when forming conclusions.</p>

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
<p>Sharma, M et al. (2020) Heterogeneity in individual preferences for HIV testing: A systematic literature review of discrete choice experiments. <i>EclinicalMedicine</i>. 29 (0), pp. 100653</p> <p>Quantitative (narrative)</p>	<p>Systematic review of Discrete Choice Experiments eliciting HIV testing preference.</p>	<p>14 studies included</p> <p>Study design not reported (unable to access supplementary material).</p> <p>Sub-Saharan Africa (n=8), Europe (n=2), Latin America (n=2), North America (n=1), and Asia (n=1).</p> <p>Publication dates: 2002 to 2019</p>	<p>Age ranged between 16 and 49 years, although mostly not reported.</p> <p>Population groups:</p> <ul style="list-style-type: none"> • adolescents and young adults • female bar workers • general population MSM • male porters • students • transgender women • truck drivers <p>Total sample sizes ranged between 233 and 1,617.</p>	<p>HIV self-testing was not defined</p> <p>No specific description provided on how self-test was accessed.</p>	<ul style="list-style-type: none"> • Acceptance • Review synthesis categorised by population type and included all types of testing 	<p>Authors reported generalisability to the population of interest as a limitation.</p>	<p>Unable to open supporting material to establish which quality assessment tool was used to assess study quality.</p> <p>The following quality concerns have been identified from CA:</p> <p>Authors claim to do quality assessment however unable to access the supplementary material to see this. No indication of whether a particular recognised tool was used. Table 2 does describe quality indicators of studies included but does not include information expected from a standard quality assessment tool. The authors do not really discuss quality or use it in informing their findings/conclusions.</p> <p>No discussion or consideration of potential publication bias.</p> <p>Generalisability should be considered further as most studies undertaken in LMIC. However one study on self-testing was from the UK. Specific population samples also differed with some studies in general populations and some in</p>

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
							at risk populations so socio-demographic and cultural differences may also limit generalisability to Wales.
Stevens, D.R. et al. (2018) A Global Review of HIV Self-testing: Themes and Implications. AIDS & Behaviour. 22 (2), pp. 497-512 Quantitative (narrative)	Summarize the current body of literature on acceptability, feasibility, and effectiveness of HIV self-testing around the world	28 articles (21 independent studies) included Individual study designs not reported but authors state majority of studies were observational, typically cross sectional and lacked a comparison	Age range not reported Population groups: <ul style="list-style-type: none"> • Adults • adults at high risk of HIV infection • emergency room patients, • female sex workers • fisherfolk 	The OraQuick In-Home HIV Test and other rapid HIV tests for individual use are referred to as HIV self-testing (HST) kits. Currently, there are many types of HST kits developed for use around the world. Note: this review is limited to just	<ul style="list-style-type: none"> • acceptability, perceptions and attitudes • performing the HIV test • limitations 	Generalisability of findings from some studies may be limited by the fact that participants had an interest in performing HST, thus elevating acceptance of the test. Few studies had a large sample size, contained a comparison group, presented longitudinal results, or examined various HST methods against	Study quality was assessed using Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies and the Mixed Methods Appraisal Tool (MMAT). Three articles rated as strong using EPHPP, two as moderate and eight as weak. Five articles scored as meeting 100% of components using MMAT, thirteen as meeting 75% and 10 as meeting 50% of components. None scored below 50%. Authors conclude that overall the evidence included in the review was of moderate quality.

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
		<p>group. Eight were RCTs.</p> <p>Brazil (n=1), Canada (n=1), China (n=2), Kenya (n=3), Malawi (n=5), Peru (n=1), Singapore (n=2), Spain (n=1), South Africa (n=2), Uganda (n=1), and the United States (n=12).</p> <p>Publication dates: 2007 to 2015</p>	<ul style="list-style-type: none"> • heterosexual couples • MSM • transgender women • university students • healthcare workers • VCT client <p>Total sample sizes ranged between 8 and 16,660.</p>	<p>HIVSTs with self-administration and interpretation of the results. However it does include studies where self-test users were trained, supervised and/or coached through the process to allow for comparison of different self-test processes in the literature.</p> <p>Settings for HIVST included home testing, testing centres, community centres, emergency rooms, hospitals, and research offices</p>		each other (i.e. blood versus oral HST).	No specific concerns were identified from critical appraisal:
Toms, K. et al. (2020) Efficacy of HIV Interventions in African Fishing Communities: A	Aims to evaluate HIV interventions in African fishing	25 studies included Study designs included cross-sectional,	Age range not reported, but all adults. Population groups:	No definition of self-test provided. No specific description	<ul style="list-style-type: none"> • HIV prevention • HIV testing, counselling and education • HIV treatment 	All findings are subjective conclusions drawn from a narrative synthesis of available evidence.	Critical appraisal was undertaken using the JBI tool, ROB2 and ROBINS-I and confidence in review findings were assessed using the GRADE CERQual approach. Studies

Study Reference (s): Analysis method publication dates of included studies	Research Question(s)/ Aim(s):	Number, design, geographical location and publication dates of included studies	Participant information (age range, population group, participant numbers)	Description/definition of HIV self-tests included and how it was accessed	Key themes identified (relevant)	Author limitations:	Reviewer comments (limitations/quality/generalisability etc):
<p>Systematic Review and Qualitative Synthesis. International Journal of Infectious Diseases. 101 (0), pp. 326-333</p> <p>Qualitative (thematic synthesis) - Although reads more like a narrative synthesis.</p>	<p>communities ..</p>	<p>qualitative, RCTs, pilot studies, mixed methods.</p> <p>African fishing communities.</p> <p>Publication dates: 2012 to 2019.</p>	<ul style="list-style-type: none"> Fisher folk or from the fishing community, some with HIV. <p>Total sample sizes ranged between 20 and 3,870.</p>	<p>provided on how self-test was accessed.</p>			<p>excluded if they 'failed' critical appraisal.</p> <p>As this review is specific to fishing communities, it may not be generalisable to the UK population.</p> <p>The following concerns were identified from critical appraisal:</p> <p>Issues were highlighted with the analysis method used for this systematic review. Authors suggest they have undertaken thematic synthesis but then do not describe this process adequately. The findings read more like a narrative synthesis and there is no mention of codes /themes /reflexivity /researcher perspective and no quotes given. The authors used GRADE-Cerqual to assess the confidence in the evidence, but this may not have been appropriate given that it's more of a narrative synthesis than a true qualitative thematic synthesis.</p>

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