

1 **Title:** Acceptability, facilitators and barriers to point of care HIV testing in a homeless-focused
2 service in Gloucestershire: A qualitative evaluation

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4 **Short title:** Point of care HIV test: facilitators and barriers

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17

18 **Abstract**

19

20 Late HIV diagnosis increases risk of onwards transmission, morbidity and mortality. Rapid Point of

21 Care Testing (POCT) reaches people never tested and people living with HIV who are undiagnosed. A

22 pilot study introduced HIV-POCT to one service in Gloucestershire, England. This study explored

23 acceptability and feasibility of HIV-POCT in this context, from the perspective of service providers

24 and users. Eleven semi-structured interviews with service users and a focus group with three service

25 providers were conducted. The Theoretical Framework of Acceptability and the Theoretical Domains

26 Framework were used to design the topic guide and analysis. Acceptability of HIV-POCT was high.

27 Seven facilitators were identified (e.g. understanding test purpose and process), alongside two

- 1 potential barriers, one relevant to service providers and users (anxiety) the other in relation to
- 2 service users (stigma). To maximise implementation of HIV-POCT, healthcare providers require
- 3 appropriate training and supervision to offer and administer POCT.
- 4

1 **Main text**

2

3 **1. Introduction**

4

5 Undiagnosed and late diagnosis of HIV is associated with negative outcomes for onwards
6 transmission, morbidity and mortality (1–4), and has significant implications for public health. Public
7 Health England (PHE) define late HIV diagnosis as “a CD4 cell count <350 cells/mm³ within 91 days
8 of... HIV diagnosis” (page 6, Public Health England, 2019). Rates of late HIV diagnosis are high (49%)
9 in Europe (6) with the proportion of late diagnoses in England being 43% (5), with an estimated
10 6,700 people living with undiagnosed HIV (5).

11

12 Risk of contracting HIV is higher for people who are homeless, or use intravenous drugs (7–9). Being
13 diagnosed within 1 year of HIV infection (10) helps reduce rates of HIV infection (3,8,11) and testing
14 is available in numerous settings (e.g. sexual health clinics, charities, GP surgeries, pharmacies) (12).

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16 Literature reviews suggest barriers for testing within the general population exist at: service user
17 (e.g. low risk perception, fear of positive results, negative consequences, low awareness of services,
18 low HIV knowledge, perception of cultural appropriateness or quality of test, and low perceived
19 knowledge of HIV in clinical staff (13,14)); service provider (e.g. reluctance to address HIV and offer
20 test; lack of confidence or skill in testing; lack of awareness of HIV epidemiology and feeling
21 uncomfortable with post-test counselling (13,14)) and institutional or policy levels (e.g. financial and
22 human resources (13)). Additionally, for people who are previous or current injecting drug users,
23 standard HIV testing can be challenging due to difficulties in finding a viable vein (15,16).

24

25 Evidence suggests that rapid point of care testing (POCT) (a finger prick test not requiring samples be
26 sent to a laboratory and can be performed where or near a patient presents) (17) reaches people

1 who have never been tested and people living with undiagnosed HIV (18). An evaluation in North
2 West England indicated that targeting marginalised groups through community based POCT was
3 feasible and acceptable to service providers and users and successfully reached groups that would
4 not have otherwise been tested (19). Community POCT is recommended to overcome barriers such
5 as stigma at using hospital-based services (British HIV Association, 2008), although concern has been
6 expressed that rapid testing could lead to rapid counselling and testing without consent (11,20).

7
8 One area in the South West of England (Gloucestershire) has seen a number of successive periods
9 (3 year rolling averages) of increases in the proportion of late diagnosis, resulting in 65% of HIV
10 diagnosis defined as late, statistically significantly higher than the England average (21). Descriptive
11 epidemiology identified risk factors potentially associated with late diagnosis, including people who
12 inject drugs. A cohort of known cases of HIV, who have risk factors associated with poor treatment
13 adherence and onward infection has been identified and all but one of these are users of local
14 homeless healthcare services. A pilot study introduced HIV-POCT to a homeless-focused service in
15 Gloucestershire as one way to reduce the rate of late HIV diagnosis in this population.

16
17 Implementation of new healthcare interventions is rarely a straight-forward or linear process (22).
18 Investigating acceptability, barriers and facilitators to implementation in a pilot study can identify
19 challenges to be addressed to improve acceptability, implementation and uptake before wider roll-
20 out, in line with Medical Research Council complex intervention guidance (23). Previous research
21 has differentiated barriers and facilitators by levels in the system: individual/groups/organisations
22 (13,14), providing valuable insights. However, as health behaviour interventions are delivered as
23 part of complex systems, it may be helpful to conceptualise barriers and facilitators in line with
24 ecological systems theory: individual/micro-systems (service users and providers), exo-
25 systems/service level (service-wide issues and communication between systems), and macro-

1 systems/population levels (socio-political landscape) (24), to understand how systems inter-relate in
2 the context of healthcare interventions.

3

4 Frameworks in the behavioural and implementation sciences facilitate exploration of acceptability
5 and barriers and facilitators to implementation of healthcare interventions. The Theoretical
6 Framework of Acceptability (TFA) (25), proposes seven different dimensions of acceptability (e.g.
7 ethicality, burden, intervention coherence), and can help inform more comprehensive, multi-
8 dimensional assessments of prospective, concurrent, and/or retrospective acceptability of
9 healthcare interventions. The Theoretical Domains Framework (TDF) (26) synthesises 33 theories of
10 behaviour change into 14 domains representing individual, socio-cultural and environmental barriers
11 and enablers to implementation and behaviour change. Both frameworks have been applied to
12 explore barriers/enablers and acceptability of a wide range of healthcare interventions (TFA (27,28)
13 and TDF (29–32)).

14

15 This pilot study aims to apply the TFA and TDF to investigate acceptability of barriers and facilitators
16 to implementation of HIV-POCT from the perspective of service users and healthcare providers at
17 individual/ micro-system, exo-system, and macro-system/population levels.

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19 **2. Methods**

20 **Design:** Service users participated in a one-to-one semi-structured qualitative interview and
21 healthcare providers took part in a focus group. Service users were offered a one-to-one interview
22 to ensure that a suitable time and date could be found for each participant and as an
23 acknowledgement that the interview may cover confidential information that service users would
24 feel uncomfortable sharing in a focus group. A focus group was offered to healthcare providers to
25 ensure that discussions were possible regarding the feasibility and acceptability of the POCT

1 amongst those administering it. Ethical approval was granted from UCL Research Ethics Committee
2 (Ref: 15851/001).

3

4 *2.1. Sample*

5 We had two participant groups: 1) people currently accessing homeless services within
6 Gloucestershire, (according to Local Authority figures, 194 households were classified as 'homeless'
7 in 2019 (33), along with 198 injecting drug users (Offer, Willis and New, 2015)); 2) healthcare
8 providers responsible for delivering POCT (N= 4).

9 Over the four-month pilot study period, new or returning service users, over the age of 18, where
10 the healthcare provider judged they had adopted one or more risky behaviours which could expose
11 them to HIV infection (i.e. injecting drug use or sex working) were offered HIV-POCT.

12 Service users offered POCT were approached by healthcare providers during routine visits with
13 information sheets and an invitation to participate in the present study. A designated 'go to'
14 healthcare provider assisted researchers in identifying healthcare providers responsible for
15 delivering POCT for the researcher to contact with an information sheet containing the researcher's
16 details.

17 Target sample size estimations were based on recommendations for qualitative research and
18 principles of thematic data saturation (35). Data saturation (the point where new data does not
19 contribute any new information) is deemed more meaningful in nonprobabilistic research for
20 estimating a sample size, than a power calculation (36). The estimated point of data saturation
21 varies between six (36) and 13 interviews (35). Therefore, we set a target of 13 interviews with
22 service users. It was not possible to set this target with the focus group, due to the total N (4) of the
23 healthcare provider population.

24 *2.2. Measures*

1 The following quantitative information was collected from the patient record system, to provide
2 context to the qualitative information for the service user group: age; sex; ethnicity; type of
3 accommodation; presence of risk factors for HIV infection (bought or sold sex; men who have sex
4 with men; sexual contact with someone known to be HIV positive; injecting drug use; prison record);
5 acceptance or refusal of HIV-POCT, and test result.

6 *2.3. Interviews and focus group*

7 Informed consent was gained for data collection including audio recordings and using the data for
8 research purposes. All one-to-one interviews took place in one sitting and were held in a private
9 room within the service providing POCT. One focus group was held with healthcare providers. The
10 interviews and focus group were conducted by an experienced researcher and transcribed verbatim.
11 A £10 remuneration was offered to each service user participant.

12 The two-part interview and focus group topic guides were semi—structured and based on the TFA
13 and TDF. Part one focused on POCT acceptability, and included at least one question per domain of
14 the TFA (25). Part two focused on potential barriers and facilitators of receiving or delivering the
15 POCT, with questions structured around the domains of TDF (26). At least one question per domain
16 of the TDF was included. To avoid potential repetition, questions were not exclusively assigned to a
17 domain, and one question may have been designed to gain information related to conceptually
18 similar domains within the TDF and TFA, for example, the same question was designed to be
19 relevant for the TFA domain ‘affective attitude’ and the TDF domain ‘emotion’. In total 15 questions
20 were included in the topic guides for the one-to-one interviews (not including prompts) and eight
21 questions were included in the topic guide for the focus group (not including prompts). Table 1
22 includes definitions of the domains from each framework and an example question from the
23 interview and focus group that tap into each domain. Topic guides for service users were piloted
24 through a Patient and Public Involvement group. For full topic guides see Supplementary file 1.

25

1 Table 1 here.

2

3 *2.5. Analysis*

4 Analysis was based on guidance for analysing qualitative data based on the TDF (37), and Thematic
5 Analysis (38) using NVivo12. This resulted in a five-stage combined deductive and inductive analysis
6 (39) approach:

- 7 1. One experienced qualitative researcher familiarised themselves with transcripts of the
8 interviews and focus group. A codebook was generated based on the TFA and TDF, giving
9 examples of codes and associated data (participants quotations).
- 10 2. Deductive framework analysis: Participant responses were deductively coded to the
11 domains of the TFA and/or TDF that they were judged to best represent (e.g. 'it's a bit nerve-
12 wracking' (pt 1) was coded to the TDF domain 'emotion'), by a single researcher, and
13 subsequently reviewed by a second researcher with experience in application of the TFA and
14 TDF. Discrepancies were resolved through discussion (40).
- 15 3. Inductive thematic analysis: Similar responses coded to the same domain from each
16 framework were grouped together, and a summary theme label inductively generated.
- 17 4. The final list of themes was subjected to member checking by a second researcher to assess
18 whether they: 1) reflected shared meaning of quotes and 2) the theme belonged to the
19 domain it was assigned. Where discrepancies arose, theme labels were refined or reassigned
20 to a different domain until consensus was reached.
- 21 5. Themes were inductively analysed in relation to how they described processes belonging to
22 an individual, the service or wider, or reflecting socio-political systems. Themes can exist
23 within different levels, for example, a barrier to acceptance may exist on the individual level,
24 as well as on the population-level system, highlighting the complexity of the impact of
25 healthcare interventions. A map of the themes was produced.

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Results

3.1. HIV point of care testing – uptake and results

When the study period ended, 14 people had been identified by the healthcare provider as having adopted one or more risky behaviours which could expose them to HIV infection and were offered POCT. Of these 14 people, 11 (79%) accepted and the POCT were administered by nurses working within the homeless service. All POCT tests undertaken were ‘unreactive’: indicating no HIV infection.

Eleven service-users participated in the interviews, 10 who had accepted POCT and 1 who refused, see Table 2 for demographic details. One focus group was held with three service providers: two nurses and one health protection practitioner.

Table 2 here.

3.2. Themes across both frameworks

Table 3 presents themes inductively generated from service users and healthcare providers with supporting exemplary quotes. No themes emerged that were not covered by TFA or TDF domains. Therefore, themes are mapped onto the TFA and TDF domains to which they correspond, and in relation to the TDF categorised as either a barrier or facilitator to delivery and uptake of POCT; in relation to the TFA, a categorisation as a ‘facilitator’ demonstrates acceptability. A number of common themes were identified between service user interviews and the service providers focus group. Many of the themes that emerged for certain domains of the TFA and TDF were similar (e.g. knowledge and intervention coherence) thus the decision was made to merge these together and present them jointly.

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Table 3 here

3.3. Facilitators and acceptability of POCT

Of the 11 themes, seven were facilitators, (see Table 3), enabling or influencing participants uptake of POCT, and contributing to its acceptability. Service users found POCT acceptable partly due to understanding the purpose and process of POCT, believing staff were able to perform POCT and believing POCT would be effective, highlighted through the TDF domains ‘knowledge’, ‘beliefs about capabilities’ and ‘optimism’, along with the TFA domains ‘intervention coherence’, ‘self-efficacy’ and ‘perceived effectiveness’. Further facilitators were: belief in a responsibility to take a HIV test (social and professional identity (TDF) and ethicality (TFA)), being presented with a choice of taking the test (memory, attention and decision making processes (TDF)) and not having to carry out additional behaviours, such as going to a scheduled blood test appointment (environmental and contextual resources (TDF) and burden (TFA)).

With regards to the healthcare providers, facilitators of delivering POCT included understanding the purpose of the test and believing they were able to administer it, evidenced by themes related to knowledge (TDF) and intervention coherence (TFA), as well as themes related to beliefs about capabilities (TDF) and self-efficacy (TFA). Further facilitators included: believing that POCT would be effective (optimism (TDF) and belief about efficacy (TFA)); belief that POCT would impact commissioning (beliefs about consequences (TDF)); desire to provide a good service, arising from contact with this population and understanding the positioning of their clinical role, (social and professional identity (TDF) and ethicality (TFA)); ability to fit the test in with other clinical duties (environmental context (TDF) and burden (TFA)) and abilities to make clinical judgements regarding who would be tested (memory attention and decision making processes (TDF)). These results suggest the healthcare provider sample found POCT to be acceptable and feasible to deliver.

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3.4. Barriers

As only two barriers to uptake of POCT were found, this summary also includes the two themes that were categorised as both facilitators and barriers (mixed).

For the service user group, a potential barrier to accepting POCT was awareness of negative attitudes towards people living with HIV (emotion (TDF) and affective attitude (TFA)). Mixed (both facilitator and potential barrier) themes related to service user’s preference to retain agency over receiving POCT (memory, attention and decision-making processes (TDF)) and uncertainty regarding what would happen in the event of a positive result (emotion (TDF) and affective attitude (TFA)).

With regards to the healthcare providers, uncertainty regarding what would happen in the event of a positive result (emotion (TDF) and affective attitude (TFA)) was a potential barrier, and agency around using clinical judgement to offer the test was both a facilitator and potential barrier if this agency were to be removed (memory, attention and decision making processes (TDF)).

3.5. Systems

Themes were differentiated according to the system they related to (24)) to demonstrate how they operate across the different levels (Figure 1). The majority of themes sat under the micro-system/individual level and demonstrated that, potentially action at this level could determine acceptability of POCT for service users. Service level themes were relevant to the healthcare providers which may represent further facilitation, or barriers to uptake and acceptability. One theme, ‘stigma’ was categorised at the micro-system/individual level and the macro-system/population level, demonstrating how this operates at both levels.

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Figure 1 here

Discussion

This qualitative study identified that HIV-POCT is acceptable to both service users and healthcare providers in Gloucestershire. Facilitators to service implementation and uptake included understanding the test, the processes, ease and convenience of testing and perceived effectiveness of the test. Two barriers were identified: stigma and anxiety. These findings support feasibility and scalability of HIV-POCT for high-risk, priority population groups, such as people who inject drugs or are homeless (15,16,18).

Previous research suggested barriers to testing such as: low risk perception, fear of positive results and negative consequences (13,14) within service user groups. Similar concerns were found in the present study; however, they did not lead to refusal of POCT, potentially as the facilitating factors held more weight in the decision process. Previous research found barriers among healthcare providers to be a lack of confidence or skill in testing and discomfort with post-test counselling (13,14). Similar themes were found within the present study; however, they did not impede the delivery of POCT. Additionally, potential practical barriers with tests requiring a blood sample due to difficulties in finding a viable vein, an issue for this sample as the majority were current or former injecting drug users (15,16), are overcome with POCT.

Concerns among service users were raised regarding awareness of negative attitudes held within the community towards both people living with, and people being tested for, HIV. This illustrates how stigma can influence HIV testing and therefore, transmission (11,41–43). Another potential concern within this sample, also reflected in the literature is the risk of ‘testing without consent’ (11,20),

1 providing POCT as a choice was important for this sample; it was suggested that integrating POCT
2 into routine testing may decrease uptake, and damage relationships with clinical staff.

3
4 For healthcare providers potential barriers centred on uncertainty of the process in the event of a
5 reactive test result. A protocol for receiving a reactive test was set out, however, it was not tested as
6 part of this study, as no reactive tests were administered, and healthcare providers expressed
7 concern regarding availability of onward services. In contrast, service users felt reassured and
8 confident in healthcare providers abilities to facilitate any further interventions, which was
9 important in managing feelings of anxiety.

10
11 Conceptualisation of the themes on a systems level allows for an understanding of how the study
12 impacted on different (albeit related) sectors of the whole system. Additionally, there is concern
13 that using frameworks to analyse qualitative data may miss important information regarding
14 relationships between themes (39); the ecological systems analysis gave an insight into relationships
15 between themes. Given the scope of this study, it is unsurprising that the majority of themes fall
16 within the micro-system/individual level. However, it is important to understand how actions taken
17 regarding HIV-POCT at an individual level can impact on levels further up the system in the form of
18 transmission rates and stigmatising attitudes. Therefore, messages and interventions designed to
19 impact on an individual level need to be consistent with aims and messages on a macro level, such
20 as decreasing rates of HIV transmission and stigmatising attitudes.

21
22 4.1. Policy and research implications

23 Results from this study suggest that introducing POCT into local services serving populations at risk
24 of contracting HIV would be acceptable for healthcare providers and service users, with the
25 following caveats. It is important that POCT is presented as a choice and that clinical staff have the
26 skills to understand and administer the test, thereby managing anxiety. Clinical staff also need to be

1 aware of the potentially stigmatising impact of being offered POCT and should ensure that
2 confidentiality is maintained, and communication handled in a sensitive manner.

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4 Further understanding is needed for healthcare providers about the onward clinical journey of a
5 service-user in the event of a reactive test. Understanding could come in the form of training,
6 preceded by qualitative research to understand barriers and facilitators.

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8 Additionally, research is required to better understand the impact of any interventions implemented
9 in the micro-system/individual level on levels further up the ecological system. A mixed methods
10 approach could be used to quantitatively track uptake of POCT and HIV transmission rates,
11 combined with a qualitative analysis of attitudes towards HIV within society.

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13 4.2. Limitations

14 The total service user group sample of 11 did not meet our target of conducting 13 interviews with
15 service users. Additionally, only one participant in the service user group refused POCT, due to
16 having recently been tested for HIV. Although the high uptake of POCT may reflect high levels of
17 acceptability within this sample, this may have reflected issues with data saturation as it made
18 identifying barriers difficult, as none were cited as reasons not to take up the offer of POCT. These
19 barriers could more accurately be described as potential barriers, and services could benefit from
20 ensuring that they are attended to before implementing POCT.

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22 Although the overall number of people offered POCT within the study was small, the data suggest
23 that it targeted people considered to be at high risk of HIV infection and late diagnosis i.e. people
24 who inject drugs and those who are homeless.

25

1 A limitation of the data collection procedure was the omission of recording if there was a pre-
2 existing relationship between the individual service user being offered the POCT and the healthcare
3 provider administering the POCT. Collection of this data may have offered an insight into who might
4 be best placed to deliver HIV-POCT and we recommend this is considered in future research.
5 Additionally, we did not have data relating to if service users in this sample had access to POCT for
6 blood borne viruses such as Hepatitis C (HCV). Collecting data on availability and uptake of other
7 POCT may aid in understanding if the POCT HIV testing could be integrated with HCV testing
8 initiatives given the overlap of risks and social need, and services used.

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10 A limitation of the analysis could be conceptual overlap between the TDF and TFA frameworks.
11 There is a need to consider how these two frameworks can best be used concurrently, avoiding
12 redundancy. Similar issues have been raised in implementation studies, and it is suggested that
13 analysis plans outline the role of each framework used (44).

14

15 These findings may reflect the specific context of one service and may not apply to other services
16 nationally, or internationally. Further research is recommended to generate evidence about the
17 generalisability of the results reported here.

18

19 4.3. Conclusion

20 Uptake of HIV-POCT amongst service users was high. The location and approach to testing, along
21 with POCT itself was acceptable and feasible to service users and healthcare providers. The results
22 indicate that POCT targeted those considered to be at high risk of HIV infection and therefore could
23 provide benefits in terms of early detection of cases, better management of individuals, prevention
24 of onward transmission and early detection of a potential outbreak.

1 Further work is recommended to establish barriers and facilitators of POCTs across different
2 contexts and in different stages of the testing process. Healthcare providers require appropriate
3 training and supervision to offer and administer POCT in a sensitive manner.

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10 No conflict of interest declared

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12 **Author contribution statement**

13 EC conducted the data analysis, with validation provided by FL, and wrote the first draft of the
14 manuscript. GA, FL, MG and SM designed the study, with SS contributing to the resources needed.
15 NA, GA, FL wrote the protocol and conducted the evaluation. SM provided supervision to EC, FL
16 provided supervision to NA and MG provided supervision to GA. All authors contributing to
17 reviewing and editing the manuscript and have approved the final manuscript.

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Table 1. Domains and definitions of TFA and TDF

TFA domain	TFA domain definition (24)	Example question from service user topic guide	Example question from service provider topic guide
Affective attitude	How an individual feels about the intervention	How did being offered the test make you feel? Prompt: Did you have any concerns? Prompt: Did the test provide reassurance?	Did you feel like it was your responsibility to offer the test?
Burden	The perceived amount of effort that is required to participate in the intervention	How convenient was the test? Prompt: How suitable a time and place was it for the test?	How do you feel about adding HIV point-of-care test to routine sessions?
Ethicality	The extent to which the intervention has good fit with an individual's value system	Did you think being offered the test by this team was appropriate? Prompt: Why do you think you were offered the test?	Do you think the test should also be offered to other people?
Intervention coherence	The extent to which the individual understands the intervention and how it works	What did you understand about the test and what it involved? Prompt: What information would you have liked to have? Prompt: What do you know about HIV?	What is your understanding of the HIV point-of-care test?
Opportunity costs	The extent to which benefits, profits or values must be given up to engage in the intervention	How much of a priority is your health in your day-to-day life? Prompt: What is more important for you?	Are there any other priorities that make the test difficult?
Perceived effectiveness	The extent to which the intervention is perceived as likely to achieve its purpose	How good a way of testing for HIV was the test? Prompt: Can you think of any other ways that may have worked better?	How effective do you think the test is?
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention	Did you feel able to cope with the test and result? Prompt: Do you have any experience of similar tests?	How easy or difficult was it to administer the test?
TDF domain	TDF domain definition (25)	Service user example question	
Knowledge	An awareness of the existence of something	What did you understand about the test and what it involved? Prompt: What information would you have liked to have? Prompt: What do you know about HIV?	What other services are available?

Skills	An ability or proficiency acquired through practice	Did you feel able to cope with the test and result? Prompt: Do you have any experience of similar tests?	How did you communicate results?
Social/Professional role and identity	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting	Did you think being offered the test by HHT was appropriate? Prompt: Why do you think you were offered the test?	How much do you think this fits within your professional role?
Beliefs about capabilities	Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use	Did you feel able to cope with the test and result? Prompt: Do you have any experience of similar tests?	How easy or difficult was it to administer the test?
Optimism	The confidence that things will happen for the best or that desired goals will be attained	Did you think that finding out whether you had HIV was a good thing? Prompt: Why?	How effective do you think the test is?
Beliefs about consequences	Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation	What did you think might happen because of having the test? Prompt: What do you think can be done if tests are positive?	Do you have any concerns about the test?
Reinforcement	Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus	What encouraged you to have the test? Prompt: How did you feel about having the choice to accept or decline the test? Prompt: How would you have felt about the test being given as standard?	Did you feel like it was your responsibility to offer the test?
Intention	A conscious decision to perform a behaviour or a resolve to act in a certain way	Would you consider having the test again in future? Prompt: What might affect your intention to have it?	How did you decide whether to offer the test?
Goals	Mental representations of outcomes or end states that an individual wants to achieve	How much of a priority is your health in your day-to-day life? Prompt: What is more important for you?	How much does the test make a difference to service users' health?
Memory, attention and decision process	The ability to retain information, focus selectively on aspects	Could you tell me about what led you to seek support from HHT today?	What are the advantages of offering the test?

	of the environment and choose between two or more alternatives	What influenced your decision to have the HIV point-of-care test? How much did it meet your expectations?	
Environmental context and resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behaviour	How convenient was the test? Prompt: How suitable a time and place was this service for the test?	Did the service have the resources it needed for the test?
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviours	Do you know other people who have had the test? Prompt: Would you discuss having had the test with other people? Prompt: Did how your service provider explained it influence your decision?	How did this fit with the team culture and ways of working?
Emotion	A complex reaction pattern, involving experiential, behavioural, and physiological elements, by which the individual attempts to deal with a personally significant matter or event	How did being offered the test make you feel? Prompt: Did you have any concerns? Prompt: Did the test provide reassurance?	How do you feel about adding HIV point-of-care test to routine sessions?
Behaviour regulation	Anything aimed at managing or changing objectively observed or measured actions	Was there anything you did on the day of the test that made you choose to have it? Prompt: How did attending affect your normal day-to-day routine?	Did you have to make any changes to your practice?

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Table 2. Demographic details of service user sample

Age	Range 29-50, Median 40
Gender	
Male	64%, n=7
Female	36%, n=4
Ethnicity	
White British	91%, n=10
White Other	9%, n=1
Housing status*	
Roofless: people living rough	36%, n=4
Insecure: people living in insecure accommodation	9%, n=1
Insecure: people receiving longer-term support (due to homelessness)	36%, n=4
Houseless: people in accommodation for the homeless	18%, n=2
HIV risk factors	
Bought or sold sex	9%, n=1
Sexual contact with someone known to be HIV positive (high risk partner)	73%, n=8
Injecting drug use	91%, n=10
Prison record	54%, n=6
Men who have sex with men	0
Reporting two or more HIV risk factors	73%, n=8
* Housing status defined by the European Typology of Homelessness and Housing Exclusion (FEANTSA, 2017)	

Table 3. Inductively generated themes

TDF	TFA	Theme	Facilitator/ Barrier	Quote from SU	Quote from SP
Knowledge	Intervention coherence	<i>Understanding test purpose and process</i>	Facilitator	"it's to see if you have HIV." Pt11	"The [POCT] kits were easy to use" SP FG
Social/ professional role and Identity	Ethicality	<i>Collective and individual responsibility</i>	Facilitator	"I hope it can make them more willing to come and have one 'cause it could cure the people catching it." Pt 3	"I think it does definitely fit with our role." FG
Beliefs about capabilities	Self-efficacy	<i>Uncertainty over coping with positive results</i>	Mixed	"if it did come back positive then the healthcare people are here to put the steps for you to sort it out quickly." Pt 9,	"I think as I say, we haven't had a reactive but we'll deal with that. We deal with far more essentially. Yes, we'll just deal with it as it comes along I think" FG.
		<i>Staff have the skills to administer test</i>	Facilitator	"she knows I'm really hard to get blood out of. I may as well be of stone" Pt1	"I guess that probably just became a bit more fluent yes" FG
Environmental and contextual resources	Burden	<i>Ease and convenience of test</i>	Facilitator	"It's all here in one place really so, you know, there's no reason why you can't access it." Pt5	"it was an extra thing but actually if they were just coming in and almost like taking their blood pressure and you could explain it quicker than trying to write things down." FG
Optimism	Perceived effectiveness	<i>Testing will have positive impact on the population</i>	Facilitator	"If I knew it was so easy to accept that I would have accepted it a long time ago." Pt 3	"Probably a small chance where there is someone who we find a reactive test on. There is big potential for impact." FG.
Emotion	Affective attitude	<i>Anxiety</i>	Barrier	"A little bit scared, yeah. 'Cause I thought, 'What if I have got it?' I kept putting off getting the test done." Pt 5	"I worried a little bit about was the whole idea that if it was reactive, we'd phone the sexual health clinic and somebody would see them and I was never convinced in my mind that's what would happen" FG

		<i>Stigma</i>	Barrier	“Just me telling someone today before I was coming to do this interview thing it’s like I had a bit of a look. You have to explain to them straightaway, ‘Oh, there’s nothing like that. It’s just I had a test and things. I was offered it” Pt8	NA
Memory attention and decision making processes	-	<i>Choice and agency</i>	Mixed	“I’d be on the back foot because it’s my life at the end of the day. You know. I think that’s down to me ultimately.” Pt 6	“not offer that to the patients on the day because actually we can’t say. If we say ‘Well I’m going to phone [SERVICE NAME] and get you an appointment today’ because that’s what we were told to do, I wouldn’t do that now because we can’t guarantee that they would get an appointment that day.” FG
Beliefs about consequences	-	<i>Carrying out the test will influence the commissioning and staffing of the service</i>	Facilitator	NA	“that would help them with their commissioning for staff and that kind of thing as well” FG

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Figure 1. Ecosystems conceptualisation of themes

