



12.

Appendix

The Invisible Appointment

Enhancing Self-Efficacy and User Experience in Home-based STI Sampling

by Joep Dortmans

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1 Research questions | Context exploration

How is the public sexual healthcare organized in the Netherlands?

How is the Netherlands doing in terms of sexual healthcare provision?

What are trends we see in recent developments around sexual healthcare in the Netherlands?

What roles do sexual healthcare providers fulfill?

How do these healthcare providers work together and support each other?

How does the pressure in demand on the GGD affect the GP and other care providers?

How are consultations for different kinds of clients organized?

When do clients, and what kind of clients, come into contact with the home-based self-sample test?

How are clients guided through the sexual healthcare system?

What are flaws in the current system?

Does the GGD recognize these problems and what do they do to solve them?

What are the advantages and disadvantages of self-sampling methods according to healthcare experts?

What is the impression of the self-sampling method with healthcare providers in the field?

Are self-sampling methods part of the future of sexual healthcare?

2 Interviews with medical professionals

This section contains insights from the interviews with medical experts that supported the understanding of the medical context this project touches upon. Besides that, it provides most answers to the research questions in Appendix 1.

2.1 Interview with dermatologist GGD Amsterdam

Insights from the interview with a dermatologist and researcher in the field of STI care and development connected to the GGD Amsterdam.

Date: 03-12-24

Topic

Key Insights

Dermatologist's Role

Splits time between Amsterdam UMC and GGD – combines clinical research with real-world public health data, providing a comprehensive view of STI trends.

STI Classification	STIs are categorized as viral (e.g., HIV, HPV, Mpox) or bacterial (e.g., chlamydia, gonorrhea). This affects treatment methods and testing availability.
Scope of Self-Testing	Self-testing is only available for chlamydia and gonorrhea. Infections like HIV or syphilis, which often require blood tests, can't be tested for at home.
Terminology: Clients vs Patients	GGD uses the term clients instead of patients, reflecting that many visitors are healthy individuals seeking preventive STI care.
GGD Target Groups	Focus on key populations such as sex workers, MSM, and transgender individuals, who may not access regular GP care or face discrimination.
Triage-Based Access	Due to limited capacity, access is restricted by criteria: age (<25), symptoms, or being part of a high-risk group.
Free Service & High Demand	STI care at the GGD is free to reduce barriers. But this also creates very high demand, requiring strict triage and resource prioritization.
Policy Shift in 2025	From January 2025, asymptomatic individuals will no longer be tested for chlamydia, as it's no longer seen as a long-term threat, making testing more efficient.
Appointment & Screening	Clients book online, answer digital screening questions, and either receive self-swab kits or are referred to medical staff based on symptoms or risk.
Self-Collection Process	For simple cases, clients collect samples in the toilet, drop them off, and leave. No physical consultation is needed if no symptoms are present.
On-Site Microscopy	Symptomatic clients (e.g., discharge) undergo immediate microscopy, allowing same-day diagnosis and treatment.
Distribution of Tests	GGD does not mail self-tests; they must be picked up. Other providers (e.g., mantotman.nl) allow for location-based self-testing, not home testing.
Anonymity	Testing can be anonymous – only a phone number or email is needed to receive results.
Usage Location	GGD kits are for at-home use, not at the health center. GPs typically don't provide swabs during consultation; they refer or provide home kits.
Self-Test Accuracy History	Old tests were unreliable; modern PCR tests used since 2009 are

	highly accurate and equivalent to clinician-performed tests.
Internal Reception	Self-testing was well-received by GGD staff as it increased efficiency and capacity with limited personnel.
Design Limitations	Current test kits are not user-friendly for people with low literacy or intellectual disabilities. Even with pictograms, instructions can be confusing.
Trust & User Doubt	Many users feel unsure about their technique, leading to distrust in the results.
Preference for Professionals	Some clients prefer professional testing, associating it with higher accuracy and reassurance.
Design vs Trust	A clinical design signals trustworthiness. Overly playful or commercial designs may reduce perceived credibility.
Internal vs Commercial Design	GGD kits were designed internally without professional input. Instruction videos were made by interns, unlike commercial brands which invest in strong design.
CE Mark Regulation (EU)	CE marking ensures safety, but not accuracy. Weak regulation allows subpar tests to enter the market.
Comparison with US FDA	Unlike the EU CE mark, the US FDA evaluates test reliability and diagnostic accuracy.
Call for Reform	The dermatologist argues for better EU regulation of diagnostics. Political issues have delayed needed reforms, leading to inconsistent test quality.

2.2 Interview with physician of the STD outpatient

Interview with physician working at the STD outpatient of the GGD Amsterdam.

Date: 03-12-24

Topic	Quotes
Patient contact	“There are two groups: some clients self-test at the clinic and I don’t see them; others with symptoms or high risk are seen by us.”
Who does what	“Usually the PCR tests – throat, anus, vagina swabs or urine – are done by the client. Blood is taken by staff.”

Core values	“Reliability, non-judgmental, accessible for everyone. Trying to understand someone’s world.”
Impact of home testing	“If someone wants contact or to share a story, it’s harder. But if they just want a medical answer, it works.”
Pros and cons of self-sampling	“Some people prefer quick testing with no talk. In some cases, you miss something, others don’t need it.”
Trust and errors	“Sometimes swabs get mixed up – throat instead of anus. That affects reliability.”
Instruction & clarity	“Here, people scan a code and get a video. That helps. But you could also do that at home.”
Experience at clinic	“People think it’s high-tech. They like scanning, the video, and doing it themselves.”
Perceived workload	“Generally good, but now it’s higher because not enough attention was paid to demand.”
Changes over time	“Workload didn’t really change over three years. Sometimes it’s due to outbreaks or bad planning.”
Effect of self-tests on workload	“You’d expect it to reduce our work, but I don’t see that. We still turn many people away.”
Beneficial groups for self-tests	“If it’s paid, the wealthy and ‘worried well’ benefit most. Free access makes it broader.”
Target populations	“You want to reach vulnerable people, those who are inexperienced or at high risk.”
First impression of test design	“Looks okay but 17 steps is a lot. I’d prefer a video.”
Design critique	“Too many wrappers. I get why, but you touch it with bare hands anyway.”
Trust in design	“It looks medical. Orange is a strange color though – kind of like an alarm.”
Duplicate testing	“Sometimes people test at home and then again here – maybe they don’t trust it or want a quicker result.”
Considerations for implementation	“Depends on your goal: accessibility, trust, or public vs. private approach. All are important.”

2.3 Interview with physician microbiologist

Insights from interview with physician microbiologist from the laboratory of the GGD.

Date: 04-12-24

Topic & Insight

Quotes

Test kit distribution

Insight: Test kits are primarily distributed in Amsterdam.

“Yes, mainly the Amsterdam region... maybe a few outside, but mostly Amsterdam.”

GGDs outside Amsterdam

Insight: Outside Amsterdam, the system varies; GGD and GP services are usually separate, so the integration seen here might be unique.

“Usually GP care is not linked to the GGD, so those are two separate streams... I expect self-sampling also takes place there but I don't know exactly how.”

Commercial testing providers

Insight: Commercial STI test providers exist, allowing direct-to-consumer testing but at a cost.

“There are commercial providers where you can order tests online and pay for them.”

Test coverage & insurance

Insight: Tests done via GPs are covered by health insurance.

“Testing at the GP falls under insured care.”

Demographics of testing

Insight: Young adults form the main group tested for STIs, consistent across the service.

“Testing peaks in people in their 20s and 30s; in other age groups it diminishes.”

Self-sampling & infections

Insight: The highest incidence and testing rates for key STIs correspond to younger adults.

“Chlamydia and gonorrhoea are most common in 20s and 30s, expected similar for other STIs.”

Changes in chlamydia testing

Insight: Routine asymptomatic chlamydia screening is being reduced due to limited long-term consequences and little impact on prevalence despite extensive testing.

“We will stop routine chlamydia testing unless symptoms are present.”

Reasons for limited impact

Insight: Partner communication failures likely maintain ongoing transmission, limiting screening program effectiveness.

“Despite years of screening and treatment, prevalence doesn’t change much... Possibly due to poor partner notification success (~33%).”

Test distribution channels

Insight: Results are funneled through GPs to facilitate treatment and maintain insured care protocols.

“Currently always via the GP, because it’s insured care and the GP needs to receive results to start treatment if necessary.”

Future communication plans

Insight: They’re exploring ways to improve patient communication and access but are constrained by funding and care regulations.

“Considering direct communication to patients, but there are challenges as GGD can’t offer paid services and it must remain insured care.”

Reason for change consideration

Insight: Shifting some testing outside the clinic could improve access and reduce overload.

“Sometimes people can’t get timely appointments at the STI clinic; direct testing could reduce the burden on the clinic.”

Treatment access for those declined at clinic

Insight: Patient preferences, especially regarding privacy, influence where they seek care. Commercial providers are expensive and may not be affordable for young people.

“Some people prefer the clinic over the GP for reasons like anonymity, even though GP treatment is available.”

Test rejection reasons

Insight: Clear lab criteria exist for rejecting improperly collected samples to maintain quality.

“Samples can be rejected if there is too little or too much urine, or no swab in the tube, etc.”

Communication of rejected tests

Insight: Transparent processes ensure patients are informed of sample issues and need for retesting without financial penalty.

“A standard code explains why a sample is rejected, and the requester (clinic or GP) informs the patient to retest. No charges apply for rejected samples.”

Recollection logistics

Insight: Retesting can be streamlined to reduce patient burden.

“Usually a short contact with the GP is needed to arrange retesting, but ideally it’s a quick pickup of a new test kit without a full consultation.”

Limitations on quality control

Insight: Some errors in sample collection are inherently uncheckable, relying on patient compliance.

“We can’t check if swabs were taken from the right body site; we assume instructions were followed.”

Detecting human cells on swabs

Insight: Lab can verify if the swab has contacted tissue but can't confirm site correctness.

"Some equipment can detect human cells to confirm contact with body tissue, but not the exact location."

Trust in patients

Insight: Patient self-sampling is considered valid and reliable when proper instructions are given.

"Overall we trust patients to self-sample correctly with good instructions; studies support reliable results."

Error rates in self-sampling

Insight: Most patients collect samples correctly, but some errors persist and could be reduced.

"Less than 1% of samples are rejected due to improper collection, indicating a small but present communication gap."

Most rejected test types

Insight: Urine sample collection poses more challenges, leading to slightly higher rejection rates.

"Urine samples are rejected slightly more often than vaginal or anal swabs, possibly due to the pipetting technique required."

2.4 Interview with general practitioner

Interview met Huisarts. Naar verwezen in interview als: Huisarts.

Date: 11-12-24

Topic

Practice context

Quotes

"I have a duo practice with a colleague and sometimes locums. We share policies with a nearby duo."

Collaboration with other services

"We are close to pharmacy, dentist, physio, and psychologists, but only collaborate actively with pharmacy."

Role of the pharmacy in STI care

"We prescribe; patients pick up meds at the pharmacy."

Patient choice in STI care

"Some prefer us; others go to GGD for anonymity. High-risk groups are referred to GGD."

Reason for referral to GGD

"GGD offers free care and has more experience with high-risk groups; we charge deductibles."

GGD expertise

"GGD has more experience with sex workers and PrEP management."

Patient decision and GGD workload	"It's often patient choice; GGD is reducing caseload due to staff shortages."
STI care role of GP	"We mostly respond to patient questions and concerns, offering testing or treatment."
Testing process for patients	"Assistants triage calls; women get vaginal swabs, men provide first-void urine for PCR."
Test kit logistics	"We order kits from hospital; patients take home and return samples."
Consultations and test pickups	"Consults can be phone or in-person; kits picked up at practice, no mailing due to cost."
Sample return logistics	"Samples collected daily by hospital courier; postal returns stopped due to delays."
Sample storage advice	"Patients advised to refrigerate samples; exact guidelines unclear."
Patient interaction considerations	"We consider age and consent, especially for young women; parents calling for adults is intrusive."
Under-18 patient handling	"Under 18s get phone or consult to assess voluntary sex or abuse due to stigma."
Difficulty discussing STI issues	"Younger patients find it hard to discuss; parent involvement raises concerns; background knowledge helps."
Importance of face-to-face contact	"Many find STI tests embarrassing; prefer anonymous or assistant-led options and patient portal results."
Face-to-face contact necessity	"Face-to-face needed only if symptoms persist or tests are repeated."
Deciding on consultations	"Some patients insist on doctor, refuse self-tests, wanting doctor to do it."
Gender differences in test uptake	"Women fear or are unsure about swabs and prefer doctors; men prefer urine tests to avoid invasiveness."
Reasons for test reluctance	"Fear of doing it wrong and test reliability concerns are common."
Trust in patient self-testing	"We generally trust patients; assistants stress correct first-morning urine; some patients need help."
Core values as a GP in STI care	"Education and prevention are most important, along with careful treatment and access to medication."
Prevention and self-sampling care	"Less education with self-sampling done remotely; patients still take risks, sometimes under influence."

Concerns about current STI care	“STIs seem to be rising due to careless handling; GGD can’t treat everyone; PrEP doesn’t fit well with GPs.”
PrEP care suitability for GPs	“GPs lack experience with PrEP; might work in big cities if interested but not standard GP care.”
Opinion on removing chlamydia tests	“No symptoms and no risk mean no testing; with risk, testing needed, though complications seem less common.”
Building trust in STI care	“Trust grows from knowing patients, accessibility, non-judgmental attitude, and shared decision-making.”
Patient trust and test reliability	“Patients usually trust tests but are told to retest if symptoms appear; no test is 100% reliable.”
Misconceptions about STI testing	“Tests aren’t perfect; samples can be incorrect or too early; retesting advised if needed.”
Additional info on test materials	“We get test kits and instructions via hospital, different from GGD Amsterdam; can share photos.”

3 Research questions User experience research

What product interactions trigger emotional responses during self-sampling and what emotions do these responses involve?

- What are the observed and defined emotions the user has while sampling?
- What are the interaction phases the user has with the self-sample product?
- What are the moments during sampling that the users experience strong emotional responses?

What are the participant’s deeper, underlying motives when self-sampling?

- What are the decisions of the user while self-sampling and why are they taken?
- Are there dilemmas that are in conflict?

Do users trust their own ability when self-sampling, and how does this tie back to the emotional experience during sampling?

- Do the users think they took the sample correctly?
- Do the users think they will question the results when they get them from the GGD?
- Do the users think they will receive a valid result?
- Do they think their own abilities in self-sampling affect the way they perceive the results? Negatively or positively?
- Do the users think they will receive results from the GGD?
- Do they trust the mailing services to deliver their sample correctly and intact?

4 Research preparations

4.1 Interview questions qualitative research

Opening questions

Have you ever done a self-sample test before?

Can you tell me something about that experience?

Can you elaborate on how that experience was for you?

Would you say you are experienced with the process of doing self-sample tests?

Do you think your previous experiences changed the way you feel about self-sampling? And in what way?

Questions after sampling

Thanks, that you are willing to help me out by discussing your experience of doing the self-sample test. Explain the goal of this first part of the interview. And state again that they are free to not answer any questions they feel uncomfortable to answer.

Firstly, I want to ask you how confident you feel that you have executed this self-sample test correctly?

When you get back the results, do you think you would question the validity of the outcome?

Do you think your sample will reach the testing lab in a good condition? Do you think this will affect the outcome of the test?

How would you describe the overall experience of doing the self-sample test? If this is difficult; If you would have to describe the experience of doing this test to me in three words what would these words be? (Give them post-its and a marker so they can put them on a paper)

Discuss every word given and let them shortly elaborate on why they picked that word.

And if you would have to describe the experience of doing this test to me in an emotion, what emotion would you pick from the list (provide the list of emotions that they should be somewhat familiar with) If you need multiple emotions, you can pick more.

Can you elaborate on why you picked these emotions?

Would you say certain emotions were more predominant than others?

4.2 Materials

For the research a couple of materials were needed. They are listed below.

4.2.1 Informed consent form

You are being invited to participate in a research study titled Redesigning the STI self-sample kit through an emotion driven design approach. This study is part of a master's graduation project and is being done by Joep Dortmans from the TU Delft.

The purpose of this research is to gain an understanding about how the self-sample kit is perceived and used by women. This process will take you approximately 60 minutes to complete. The data will be sound recorded for later processing, whereafter it will be anonymised and deleted. The anonymised results are used in the final report that is presented and uploaded to the repository of the TU Delft.

We will be asking you to answer questions about your opinions, experiences in the context of STI care and self-sampling tests. We will ask you to partake in multiple generative exercises. The data that is collected will not be shared with any parties until the data is completely anonymised. If there are any other questions about this process feel free to discuss them any time.

As with any online activity the risk of a breach is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks by anonymising the data collected and storing it in the drive of the TU Delft any personal data will not be shared with other parties. The processed and anonymized data will be shared with other parties like the GGD Amsterdam and the TU Delft in the form of a final report.

I want to remind you again that your participation in this study is entirely voluntary, and you are free to withdraw at any time. You are free to omit any questions. Data can be removed from the record if you wish, up to a week after the interview. This will not be possible when interviews are completely anonymised, and the recordings are deleted.

4.2.2 Motive card

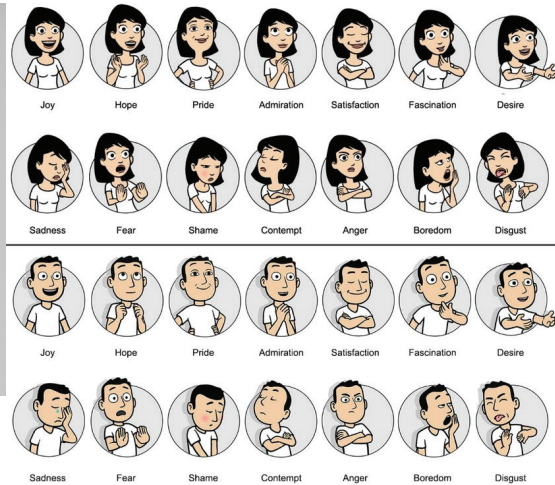
emotion		card no.
stimulus event	researchers' notes	Participant:
motive (goal, expectation, need, standard, value...)		

Laddering:



Fundamental need:

4.2.3 PrEmo cards



PrEmo Cards

5 Emotion scan results

The data collected during the emotion scan was partially written down on the timeline and motive card and partially recorded. This section shows the collected data and insights from the data collection forms as shown below.

MP1

Interview insights

Overall experience

- Simple to complete
- Scared to spill
- Quite awkward to be handling your own urine

He felt:

- Awkward
- Anxious

Self-efficacy and trust in outcome

- He is certain that he completed the test correctly
- He would fully trust the outcome to be accurate

Emotion scan insights

Product cause:

- The opening of the lid causes the urine to splash into the bowl and makes handling awkward
- The narrow field of the slots is hard to balance standing up
- Order of actions that need to be taken is unclear
- The bag sticks differently than the user is used to

Other insights:

- Mistakes are taken very personally. User blames themselves

Quotes:

"I am so annoyed. There is no space in bathrooms to put stuff and I don't want to put it all on the floor"

Joep Dortmans



6 Qualitative interviews & Emotional motive results

This section contains insights from the consecutive interviews to the emotion scan and insights from the motive laddering sessions.

Some examples of the laddering process:



6.1 Emotional dilemma clusters

All motive dilemmas that were found were clustered in themes that are listed below with all dilemmas within that specific cluster.

Communication of information

I want to be a little bit ignorant. The details disgust me. FP4

vs I want to be clearly instructed. FP4

I want to read as little as possible. MP5

vs I want to be clearly instructed. FP4

- I want them to take into account my skills as a non-professional. (FP4) vs I want to be taken seriously. (MP5)
- “I wanted more clarification about the insertion of the q-tip but did not receive more. I want to know why.” vs “I am getting the impression that they think I am stupid, because of some unnecessary information”
- “The medical codes and text at home feels too serious and made me second guess myself” (FP4) vs A medical look makes for a more trustworthy product. (dermatologist)
- I want the test to be tailored for my abilities. (MP6) vs I want patients to trust our professionalism

Workspace

- I want to have a clear overview of what is happening. (putting all components in the bathroom) (MP3) vs I want to work neatly (MP4)
- I want to be able to do this quickly. (MP3) vs I want to work neatly (MP4)

Time efficiency

- I need to know if im healthy. So I have to complete it. (MP1) vs I am quite stressed if I have to do these tests. I dont want to do this. Reluctance (FP1)
- “It is frustrating that I havent gotten that far yet” (FP2) vs Feeling doubt and not getting out of that feeling. Wanting to go back to know you make the right decision (FP2)

Moral dilemmas

- I want to move on with the test. (Boredom) (MP4) vs I should not use a drinking cup for collecting urine. (MP4)
- I should not waste too much material. (FP4) vs I want the test to feel of high quality (MP6)

Making mistakes

- Sticky edge of the bag is easy to use. Feels secure to stick it. (FP3) vs Nervous to stick it shut because it is irreversible. What if i did something wrong and have to go back. (FP1)
- I need to know if im healthy. So I have to do everything correctly. (FP2) vs I want to be relieved of stress. (FP3)
- I want to be able to do this test on my own terms. (MP2) vs “I miss the human interaction in the form of affirmation” (FP2)

7 Observations in context use

Three prototypes were tested by users in the context of the bathroom.

7.1 Quotes from testing with users in context

Interview quotes – 08-04-2025

Quotes user 1:

I like the compartments that are open on the side the best because it looks more like a coherent product and less messy.

For me the compartments definitely improve the workflow of the test.

I would like to have the instructions first, then the swab, then the tube, and then the little white bag because I might lose that in the compartments. Now it was hard to reach.

The color change has to be clearer. And the dot left behind is very small.

The color changed from orange to dark orange.

But it was fun to do. I felt like a scientist. I was intrigued that it was kind of working a little bit.

The vertically oriented compartments were not convenient for me. I had to reach into them too much. The sideways compartments gave more overview.

The sticker attachment was not nice. I was worried it was not going to come off my mirror when I wanted to take it off. Even if it would be a tape that is better suited for the context in stickiness I mean, I still would not like it because it can leave residue.

I do not want to have to scratch it off my mirror or tiles.

I would probably just lie it down on my table and take the stuff I need to the bathroom, and it offers that functionality too.

Quotes user 2:

Hanging the instructions on the wall is nice! I think I have to make the suction cap wet before I use it so I will do that. That works just fine. I can hang it on the wall.

The components are quite easy to find like this.

Tap the sample here... hihi this is quite funny to see. I can only see a very small color change so that does not tell me much.

Now I do not have a box so I will just put the tube in the bag, that feels much easier than before.

The hook on the one was really worthless. I had so little options on where to hang it that I did not really know what to do with it.

The suction cap worked well and gave a lot of options on placement. I could even rehang it when I needed to.

The test strip did not really work for me. It was too unclear.

Maybe if I tap too much or even swipe over the strip it would affect my sample too much? I was worried about that.

It needs to be easy to see what is in them. But if it just sticks out a little bit that would be enough, then I see it and can pull it out. But sticking out is important.

The sticker is stuck when you place it. I cannot move it after I place it and that is kind of inconvenient.

8 Generative sessions

Some quotes and insights from the generative sessions with users and medical experts are presented in this section.

8.1 Generative session with female users

03-04-25

In the beginning, the goal statement of the generative session is shared with the participants.

What is it like for a woman to do a self-sample test and what feelings, attitudes and concerns do they have when getting tested?

Before the first round started the group did a short energizer to get the participants into a creative and responsive mindset.

Past personal experiences

In the first round of the generative session the participants are given a few minutes to individually work out their previous personal experiences with self-sampling. Then one by one the participants explain what they wrote down or drew to the other participants. This is an interactive part of the session where all participants are able to respond to each other's experiences.

Emotional Landscape of Testing

"It feels personal. I can feel quite lonely at times when doing such a test, because it really feels like my thing."
– PG1

"Lonely feels so heavy, but I think it is a feeling of loneliness, yes." – PG1

"Yes it is lonely, but for me I would also not want it to be a thing you would do together." – PG3

"There is a tension between the loneliness which is uncomfortable and on the other hand the need to do this by yourself and on your own terms." – Interviewer

"You also don't want to directly share the things you find out. You would first want to know it yourself and figure out how to tell others about it." – PG1

Social Dynamics and Support

"With some friends, like roommates, I would like the company while testing. Because then it becomes something casual." – PG2

"Yeah if it were to be a yearly trip with friends to go do a SOA test, I would be down to do that. It would be quite fun." – PG1

"You probably do not want them to hold your hand while doing it... but if everyone talks about their experiences, like haha, my test went wrong... that would make it more fun." – PG3

Experience at Testing Locations vs Home

"At the GGD... there was no space to put my stuff. Maybe a small shelf, but not even big enough for the manual." – PG3

"At home I could take my time... but I reread the manual multiple times. What do I need to do next?" – PG3

"The walk of shame in front of everyone in the waiting room with all your things... what are they thinking?" – PG3

“Women tend to worry about taking the last toilet stall and the feeling they need to rush... the men were completely surprised.” – PG2

Design & Usability of the Self-Test Kit

“The manual made me think of IKEA. The red crosses reminded me of Ajax. The blue bag reminds me of a biohazard.” – PG2

“Corona was an instant association... it feels like something very serious.” – PG1

“The red letters are aggressive. The orange stands for danger and keep out.” – PG3

“It reminded me of a bunch of litter or waste... unstructured, empty and lots of different plastics, no unity.” – PG3

“I lose overview instantly when I unpack it... a lot of text and at the same time very little information.” – PG1

“The itinerary was nice to me because it gave me some overview.” – PG2

Future Aspirations for STI Testing

Motivating, exciting experience – Testing should feel like a natural and empowering part of life.

Community and normalization – “We do this together as a society or group, instead of individually.”

Regularity and familiarity – “Make it more normal to go on a half-year basis, like a dentist’s appointment.”

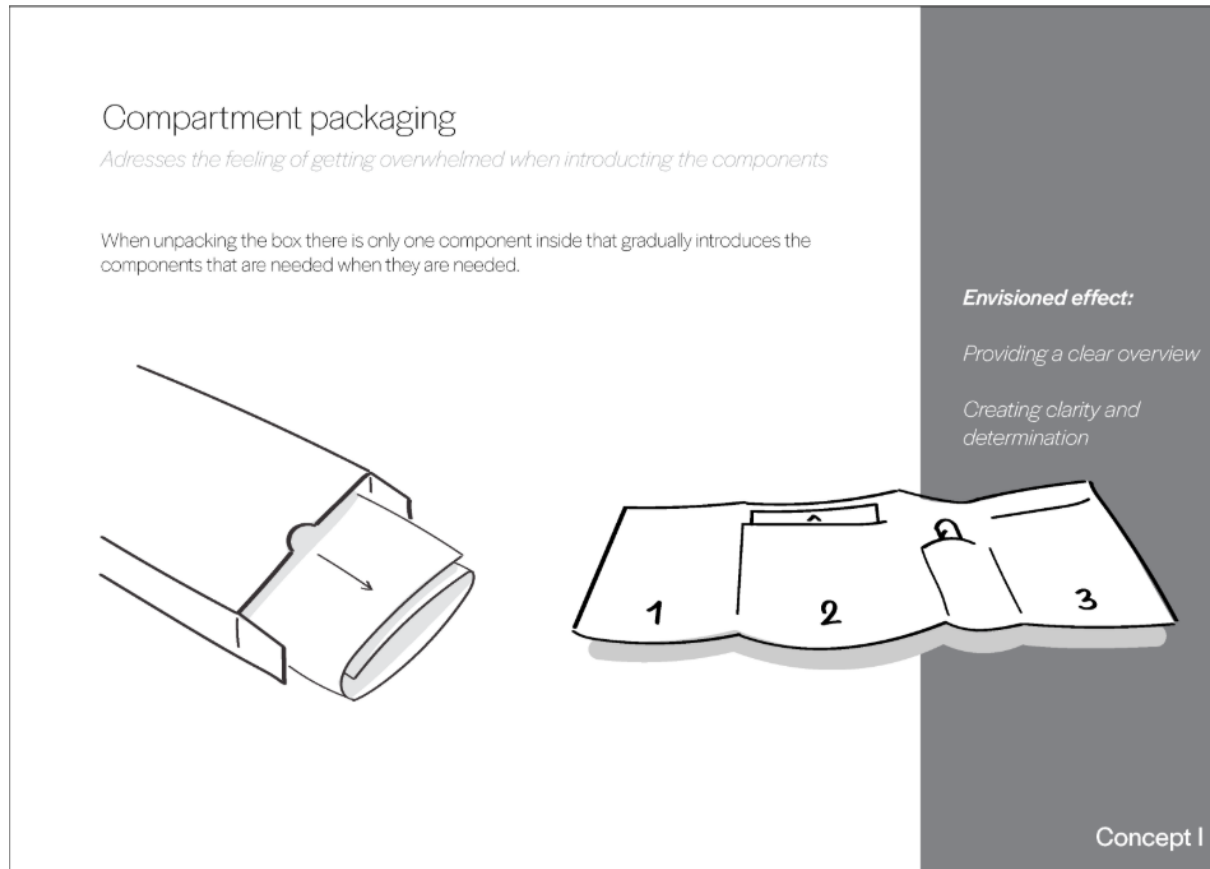
Clarity and simplicity – “Simplified testing, work with clear texts and hide the rest that is unnecessary in the moment.”

Other findings

A recurring theme that emerged was a sense of loneliness associated with at-home STI testing. Participants described a dilemma: while they valued the privacy of testing at home, they also wished it could be a shared experience—particularly among friends. Hearing about other women’s experiences was seen as helpful in normalizing doubts and questions, helping them “feel less stupid” for things they were unsure about.

8.2 Design session female users - responses to concept cards

This section presents the concept cards that are introduced to the participants. The main insights per concept card are presented underneath with some quotes.



Gives the test a calmer first impression

"This seems very calm to me which is exactly what I am looking for when doing this.

You can clearly see the beginning and the end..." (PG2)

"I would like it much more if everything came out of the box exactly when you needed that component." (PG3)

- Might hide some of the information

"I would not want to miss any information because it is hidden." (PG1)

- Might result into more things or a bigger test kit

"It is nice, but it needs to stay compact because there are already some big components and I want to be able to place it in my bathroom. So, on the edge of the sink or something like that." (PG1)

Demand: The components and information should be clearly visible within the new packaging.

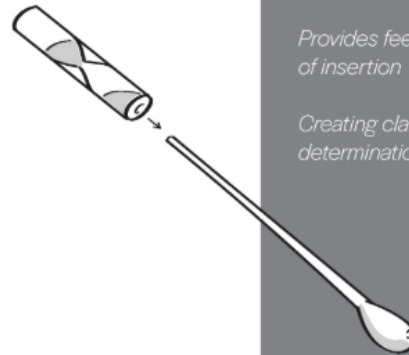
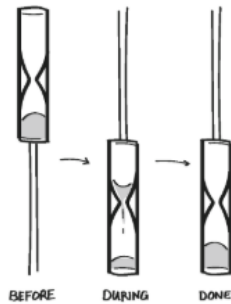
Demand: The information provided should be dissected into smaller, more approachable parts.

Demand: The needed components should be presented in the packaging when needed in the self-sampling process.

The hourglass attachment

Addresses the insecurity and doubt about sufficient insertion time

An hourglass component is added to the sample kit. This component can be attached to the end of the swab. Before use, the hourglass is held upside down and is flipped while taking the sample. The hourglass indicates the sufficient amount of time needed to take a sample.



Envisioned effect:

Provides feedback on time of insertion

Creating clarity and determination

Concept II

Women do not look at the swab while taking the sample

"I get the idea, but it would be very weird for me to look in between my legs to see if the time has run out. I do not really see that happening." (PG2)

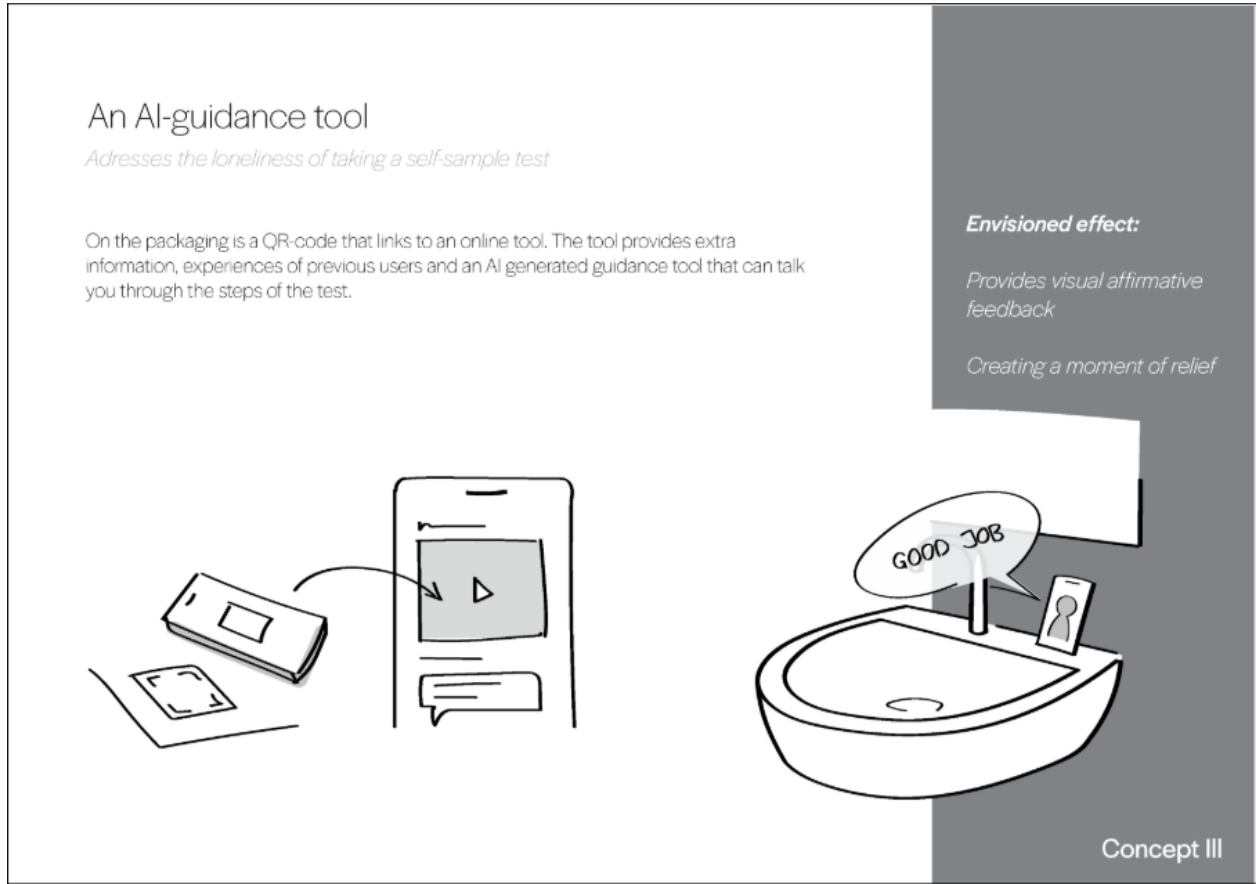
- Feedback is misplaced on the cotton swab

"For me the visual feedback would be nicer in some way in the manual or the steps you do. That if you complete a step, that you can check it off on the manual. For me that does not have to be on the swab." (PG2)

- Would be an extra distraction from sampling

"It would give me more stress than that this would solve anything for me I think." (PG3)

Wish: The redesign should add as little steps as possible to the self-sampling procedure.

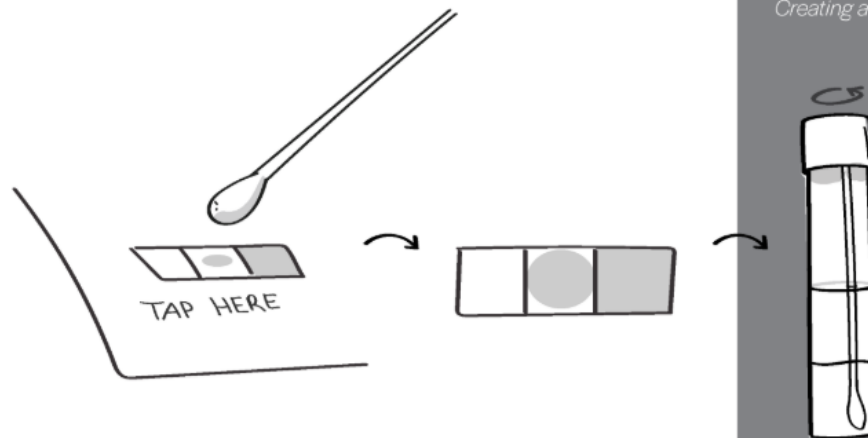


- Might cause a decrease in accessibility
 - “I cannot scan QR codes so it can also make accessibility less.” (PG1)
 - + Visual instructions in video
 - “For me the AI is not necessary, but the visual videos would be much nicer for me.” (PG2)
 - Direct support from an AI tool is intrusive
 - “The AI during sampling would be horrible. A robot telling you that you are doing great. Like, sorry why are you here?!” (PG3)
 - + Could be helpful as additional support
 - “I do really see potential in the concept though as an extra application.” (PG2)
- Demand: The redesign should offer additional information to the user when asked for, in the form of instruction videos.

The HP-tap indicator

Addresses the insecurity and doubt about the correctness of the sample

A PH-indicator is printed on the manual or packaging. After the sample is taken the user can tap the indicator and see the color change, before placing the swab in the tube.



Envisioned effect:

Provides visual affirmative feedback

Creating a moment of relief

Concept IV

Perceived as unhygienic

“Because it will get contaminated and then that will have an effect. The paper is not clean.” (PG2)

“Then I have to tap the manual and that is kind of disgusting, and it makes the swab dirty.” (PG3)

+ Could provide feedback

“I think it would give me the feedback I need” (PG1)

- Feedback might be wrongly interpreted

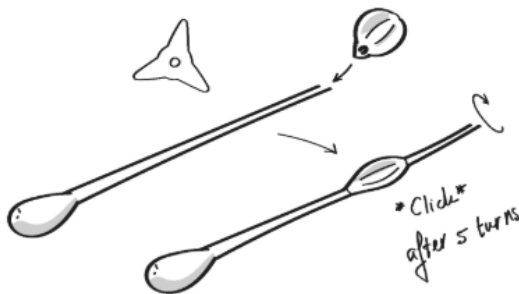
“I think people will think the wrong thing after doing that. That they assume that they do or do not have an STI based on the color change” (PG3)

Demand: The affirmative feedback should be clearly meant for checking the amount of specimen taken and not

Clicker attachment to the Q-tip

Addresses the uncertainty of sufficient movements during sampling

An attachment part is added to the sample kit, that can be



Envisioned effect:

Provides visual affirmative feedback

Creating a moment of relief

Concept V

Increases a feeling of control

“That would be really nice! Only the feeling that there is some feeling to the swab would be great.” (PG2)

- Adds another component to the test

It might get more confusing, more steps and more can go wrong.” (PG1)

The click-sound might be disturbing

“I do see how this would help, but I would be very careful with the sound that it makes because it is in a sensitive spot.” (PG2)

8.2.1 Responses to concept cards Insights

Concept I: Compartment Packaging

Insight: Clarity and Calm Reduce Friction to Start

Participants strongly appreciated the structured and minimal design, which reduced overwhelm and made the task feel more approachable.

What worked:

Visual clarity and step-by-step structure made the

process feel manageable.

Physical compartmentalization reduces cognitive load and hesitation.

Quotes:

“This seems very calm to me, which is exactly what I am looking for when doing this.” – PG2

“You can clearly see the beginning and the end...

that makes you know where you are going.” – PG2

“The overview is even more important to me...

when the overview is there, I am okay with having to look for information a bit more.” – PG1

What didn't work:

Hidden or staggered information can cause mistrust or fear of missing something important. Concerns about compactness and practicality in small spaces like a bathroom.

Quotes:

“The information is somewhat hidden... I would not want to miss any information.” – PG1

“I would like it much more if everything came out of the box exactly when you needed that component.” – PG3

“It needs to stay compact because there are already some big components.” – PG1

Concept II: Hourglass Attachment

Insight: Feedback Must Be Passive, Not Disruptive

The idea of timing feedback was liked in theory, but the execution was too intrusive, awkward, or stressful.

What worked:

Desire for confirmation that the test is done correctly and for long enough.

Some appreciation for physical or visual feedback to build confidence.

Quotes:

“It would give me the feeling that I did it long enough.” – PG3

“Isn't it much nicer if the swab would just change color?” – PG1

“That would be ideal.” – PG2

What didn't work:

Physically looking between legs or mounting the hourglass was described as awkward, unhygienic, or stressful.

Concerns that it might distract from proper technique or cause more anxiety.

Quotes:

“It would give me more stress than it would solve anything.” – PG2

“You don't look there... it would be super awkward.” – PG1

“It would be a hassle to get it on the swab correctly.” – PG3

Concept III: pH Indicator Strip

Insight: Feedback Must Be Clear, Hygienic, and Unambiguous

Though visual confirmation was desired, the method created confusion and mistrust, as users feared contamination and misinterpretation.

What worked:

Desire for tactile or visual feedback and confirmation.

Recognition that better manual wording would already solve much of the problem.

Quotes:

“For me the text in the manual was just not good enough... does 'turn' mean rotate or stir?” – PG2

“Just that would make a huge difference.” – PG1

What didn't work:

Seen as medically unsound, unhygienic, and reminiscent of COVID rapid tests—causing potential misinterpretation of results.

The idea that it could introduce doubt about the user's ability.

Quotes:

“People might think they do or don't have an STI based on the color.” – PG2

“It is also a confirmation that it can go wrong.” – PG1

“I have to tap the manual and that's kind of disgusting.” – PG3

Concept IV: AI-Guidance Tool

Insight: Digital Support Works Best Beforehand, Not During

There's a clear divide: participants want guidance and visual aids, but reject live AI feedback during the test due to the intimate nature of the moment.

What worked:

Appreciation for preparation and expectation-

setting before the test.

Support for instructional videos and seeing frequent user questions to normalize doubt.

Quotes:

“I immediately thought I would be happy to have this.” – PG2

“If you would add [others’ questions] as an extra, that would be nice... you feel less like an idiot.” – PG2

“That you use the tool like a hospital briefing: this is what to expect.” – PG3

What didn’t work:

Real-time AI guidance was seen as invasive, artificial, and absurd during a personal process.

Quotes:

“A robot telling you you’re doing great? Like, sorry why are you here?!” – PG3

“I would not trust AI at that time.” – PG1

“Too many steps and too much information in text.” – PG3

Concept V: Haptic Attachment Tool

Insight: Subtle Tactile Feedback Is Appreciated, But Must Be Seamless

Participants welcomed physical reassurance through tactile sensations, but were wary of introducing more complexity or potential malfunctions.

What worked:

Sensory confirmation (like a snap or touch) helps users feel they did it right.

Subtle feedback is more comforting than explicit, visible cues.

Quotes:

“Only the feeling that there is some feeling to the swab would be great.” – PG3

“The snap of the swab... gave affirmation to me.” – PG3

What didn’t work:

Adding extra attachments increases the risk of confusion or mistakes.

Concerns about sound, mechanical failure, or

discomfort in sensitive areas.

Quotes:

“It might get more confusing... more steps and more can go wrong.” – PG1

“Be very careful with the sound it makes because it’s a sensitive spot.” – PG2

“The real worry... is that it is not correctly taken... the manual says it so weirdly.” – PG1&3

Cross-Cutting Insights

Overwhelm comes from poor information design, not the test itself.

“If it had not been so in my face, I would have had more peace of mind.” – PG2

Confidence comes from clear expectations and simple feedback.

“There is a lot to gain here [in how the manual is written].” – PG1&3

Intimacy of self-testing must be respected in the design.

“In the moment of sampling... AI would be horrible.” – PG3

8.3 Elaboration on Requirements

User experience requirements

R1 – Promote a sense of self-efficacy

Literature suggests that self-efficacy beliefs can be strengthened by reducing negative emotions during use and by acknowledging progress or past success. The final design should support self-efficacy by addressing emotional pain points identified in Chapter 6 and by introducing clearer, step-by-step instructions that acknowledge progress upon completion. Enhancing the user's sense of control, offers better overview, and fosters a feeling of accomplishment throughout the sampling process.

R2 – Affirmative feedback

In Chapter 6 a lack of affirmative feedback appeared to be the cause of lingering feelings of doubt with users of the swab test. The redesign should provide the affirmation the user needs to resolve feelings of doubt after a decision is made.

Usability requirements

R3: Improved overview

To help users acknowledge progress during sampling, the process needs to be broken down into more approachable, clearly defined steps. While the current manual outlines the procedure in steps, it lacks a clear distinction between different phases of the process. The redesign should create a sense of closure after each phase by signaling completion and removing or minimizing information that is no longer relevant. The redesign should enhance the user's sense of overview and control.

R4: Clarity - clearer instructions

Users reported feeling as though they were only given partial information. Experts at the GGD explained that this was an intentional choice to avoid overwhelming users with too much detail (Appendix 2.1). However, this approach left many users feeling poorly informed and uncertain about whether they had correctly followed the test's expectations. Chapter 6.3 revealed a key dilemma: users want to feel well-informed and taken seriously, but they also do not want to receive excessive information that may seem obvious or redundant. This tension highlights the need for instructions that are both clear and concise—providing essential information without patronizing or overloading the user.

R5: Segmentation of information

Findings from the micro-emotion scan indicated that users often experienced information overload during the initial stages of familiarizing themselves with the test. The redesign should incorporate a step-by-step introduction of tasks, reducing an overwhelmed feeling and enhance overall task performance.

R6: Simplicity

Experts at the GGD were already aware that the test and the number of steps required to collect a sample could feel overwhelming or complicated for users (Appendix 2.1). Sessions with female participants confirmed the need for greater simplicity during testing, highlighting that both the number of steps and the disorganized

arrangement of components contributed to this complexity.

The redesign must reduce the number of steps needed to take the sample as much as possible and arrange the components of the test in a way that interpretation of when and how to use the components is easier.

R7: Inclusiveness

The self-sample test is widely used and designed to accommodate a broad and diverse range of users. The redesign should ensure that the test's versatility is not compromised – for example, by being mindful not to exclude certain groups in society.

Embodiment requirements

R8: Context suitability

One source of negative emotions was that the self-sample kit did not align well with the context of use – typically the bathroom. Prototype testing in this context (see Chapter 7.4) indicated the potential of a test kit that is better adapted to the environment to promote ease of use in the most common use setting. In this way, the redesign should help to reduce frustration and discomfort. By better fitting the context, the new design should support a more positive emotional state during sampling.

R9: A medically reliable appearance

Healthcare professionals underline the importance of a clinical look and feel to ensure a medically reliable impression with the users. The redesign should convey medical reliability through the designed look and feel of the product.

R10: Feasibility for the GGD Amsterdam

The product must be feasible for the GGD as an independent organization – without having to rely on external medical manufacturers. Simultaneously, the redesign must stay within a similar price range for manufacturing.

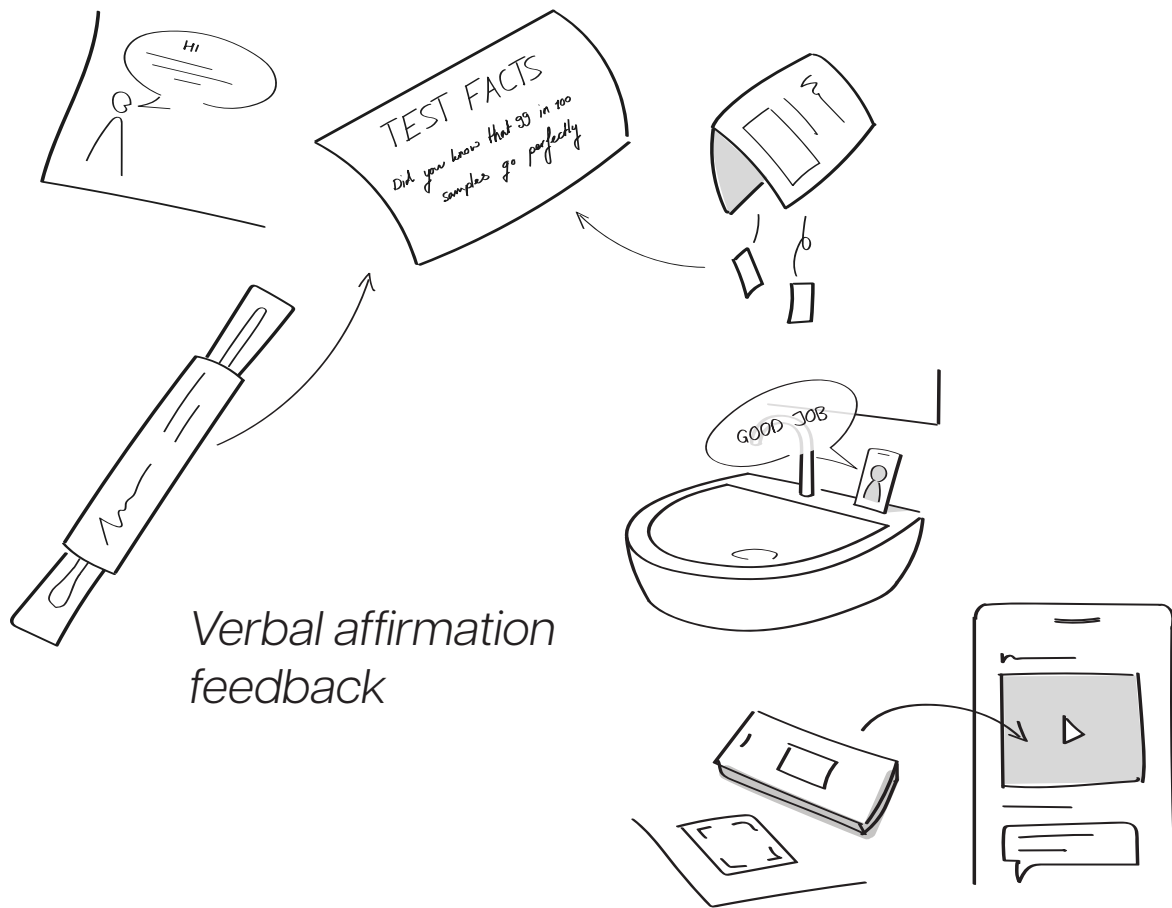
R11: An approachable appearance

The appearance of the previous design felt unwelcoming to users due to an overly medical look. The redesign should appear approachable to users by providing clear achievable steps and gradual introduction of new information and components.

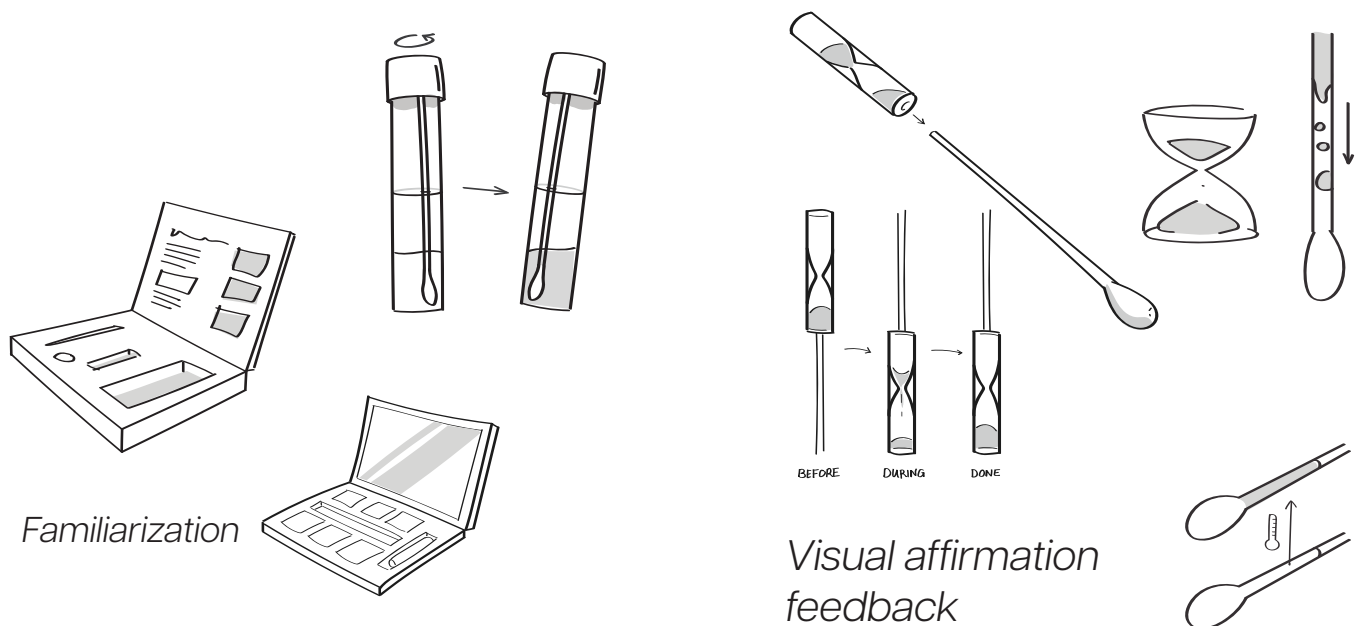
R12: High-quality look and feel

The materials used for the redesign should feel sturdy and smooth. Meaning that the materials should not crackle and rip like the packaging material from the previous design, as it was associated with cheap and disposable things, like airplane food, in the session with female users. A high-quality look and feel are important for reliability perceptions.

9 Ideation sketches

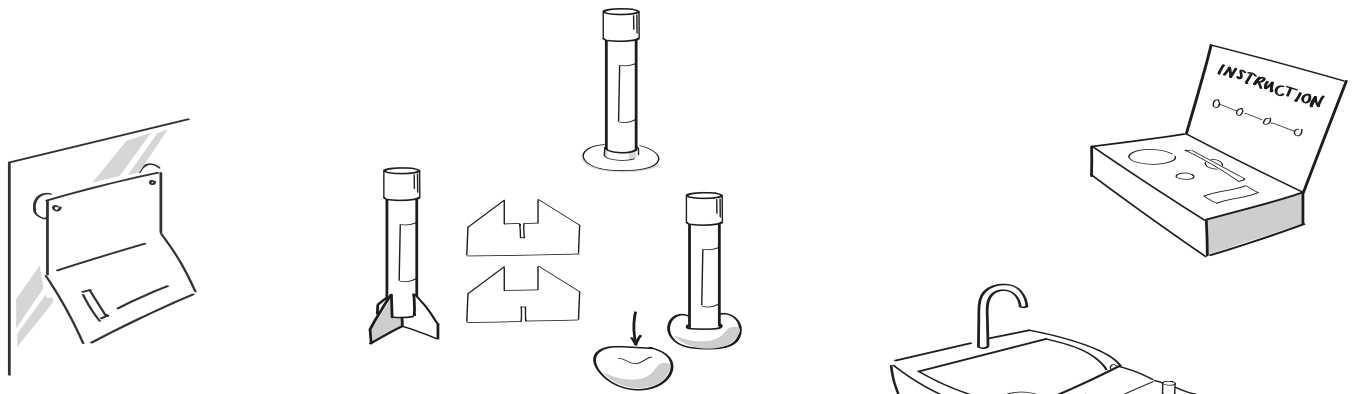


Verbal affirmation feedback

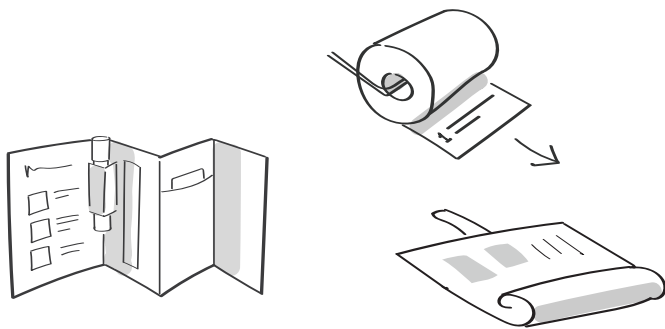
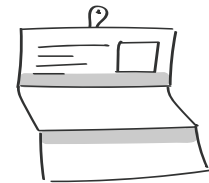
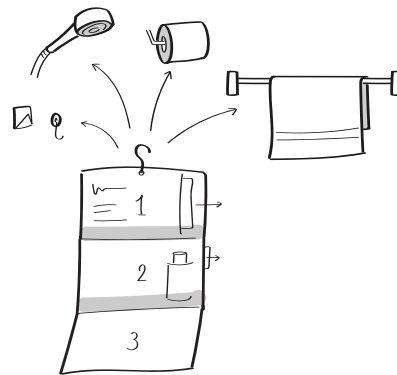
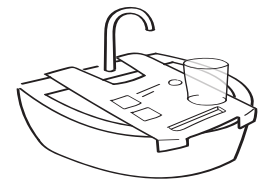
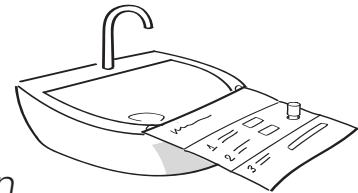
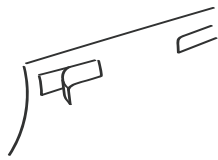


Familiarization

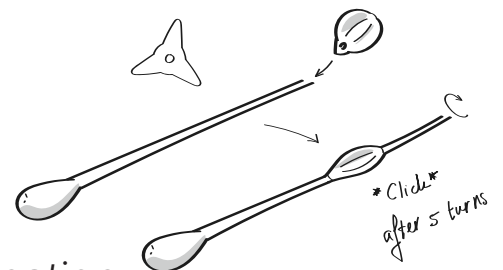
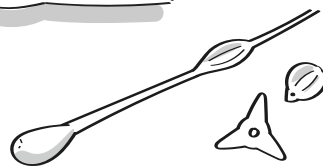
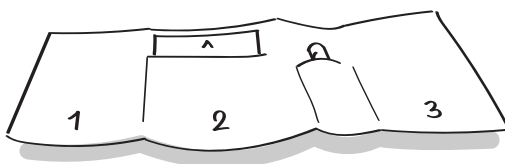
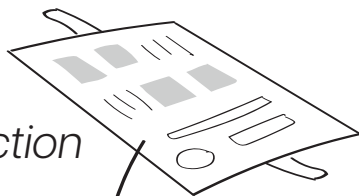
Visual affirmation feedback



Ease of use within the context



Gradual introduction of components

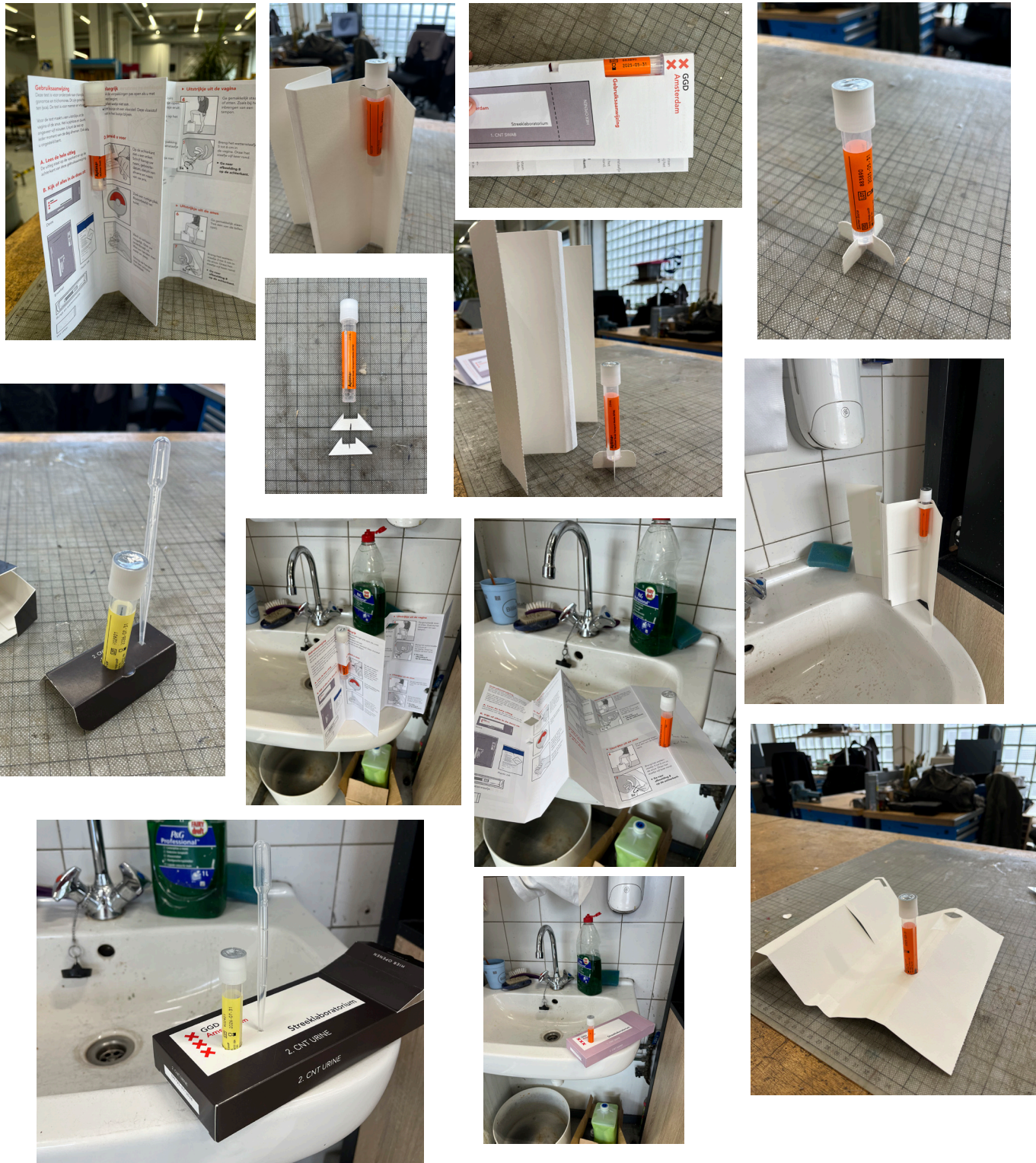


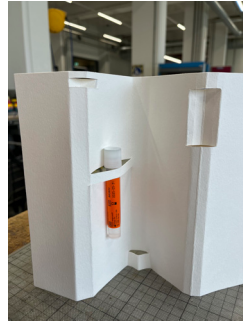
Haptic affirmation feedback

Click after 5 turns

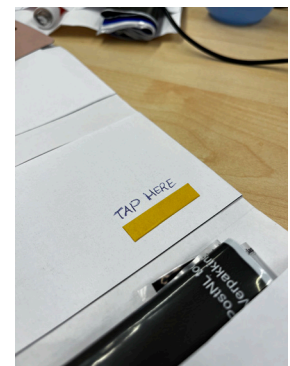
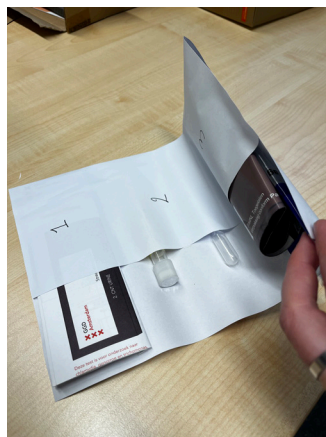
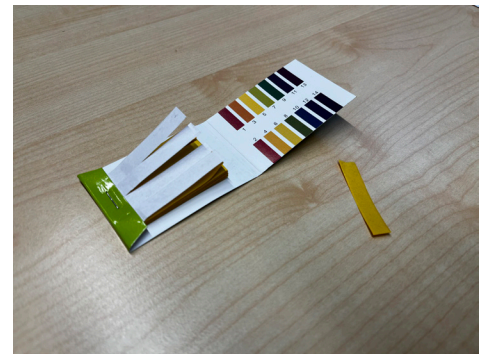
10 Iteration rounds | rapid prototyping

This section gives an insight in the visual representation of the models, prototypes and test materials I built during the rapid prototyping rounds.





Exploring new ways of shaping the manual



11 Evaluation

This section elaborates on how the evaluation of the final product is built up by presenting the interview questions and showing more insights on from the interviews

11.1 Qualitative interview questions

R1 – Promote a sense of self-efficacy

“How did you feel about your level of control during the process?”

“Did you feel like you did the test correctly?”

“Are you sure about the correctness of your actions during sampling?”

“Did you feel confident at each step? Why or why not?”

Counterquestion: “Can you give me an example of a time you felt especially in control or unsure?”

R2 – Affirmative feedback

“How did the kit give you feedback when you made a decision?”

“Was there anything that helped you feel sure you were doing it right?”

Counterquestion: “Can you think of a moment where you felt especially reassured or uncertain?”

Usability Requirements

R3 – Improved overview

“How did you feel about the amount of information you had during each phase?”

“Did you feel you always had a good sense of what you had done and what was next?”

Counterquestion: “Can you describe a time where it felt especially clear or confusing?”

R4 – Clarity

“How would you describe the clarity of the instructions or information?”

“What parts felt easy to understand, and what was more difficult?”

R5 – Segmentation of information

“How did you feel about the way information was introduced?”

“Did it feel overwhelming at any point? If so, when?”

Counterquestion: “Was there a time when the information felt especially well-organized or step-by-step?”

R6 – Simplicity

“How simple or complex did the process feel to you?”

“Were there any steps that felt unnecessary or too complicated?”

R7 – Inclusiveness

“Did you feel that the kit was designed with you in mind?”

“Was there anything that felt exclusive or hard to relate to?”

Counterquestion: “Can you think of a way the kit could be more inclusive?”

Embodiment Requirements

R8 – Context suitability

“How comfortable did you feel using the kit in the context where you used it?”

“Was there anything that caused frustration or discomfort?”

R9 – Medically reliable appearance

“How did the kit’s appearance influence how reliable you thought it was?”

“Did it feel like a professional or medical product to you?”

R10 – Feasibility for GGD Amsterdam

“From your perspective, do you think this kit would be easy for an organization like the GGD to use independently?”

“Do you see any parts that might be hard to manage or produce locally?”

R11 – An approachable appearance

“How approachable or intimidating did the kit look to you?”

“What would make it feel even more approachable?”

R12 – High-quality look and feel

“What did you think about the materials and how the kit felt in your hands?”

“Did it feel like a high-quality product?”

General Counterquestions for Follow-up

For any requirement, also use:

“Can you give an example?”

“What do you think caused that feeling?”

“If you could change one thing to improve it, what would it be?”

11.2 Qualitative interview insights

Insights from interview with participant 1 evaluation test 26-05-2025

Overall Confidence with One Key Uncertainty
Insight: PE1 felt mostly confident performing the test, but had persistent uncertainty about one specific step—packaging the tube.

Quote:

“I feel like it’s went well and what I did made sense... But the problem for me is still like, did I put the tube in the pockets right?”

Clear Instructions Build Confidence

Insight: Clear and intuitive instructions, especially at obvious or familiar steps, enhanced confidence and supported autonomous action.

Quote:

“The instructions are very clear... when I follow

them up, I’m like, okay, I have to be doing this right, which helps a lot.”

Information Delivery Was Well-Paced—Mostly
Insight: The step-by-step presentation of information was appreciated, but initial confusion (like missing info on the back) created brief insecurity.

Quote:

“Every time I was doing something, I was like, okay, yeah. I’ll get to the next step... But I had almost missed that [info on the back].”

Physical and Emotional Discomfort Affected
Experience

Insight: The physical act of sampling felt awkward and exposed, especially compared to familiar self-care tasks (like tampon use), highlighting a need for more comfort-aware design.

Quote:

“It feels a bit awkward... I have to do it standing up, but I can’t put my leg up... It’s a weird position that I’m usually never in.”

Perception of Task Size vs. Simplicity

Insight: Though the test process was logically simple, the medical weight and packaging size made it feel psychologically larger or more complex.

Quote:

“It’s a simple task, but it can feel very big... because it’s a big package, it easily feels like a big task.”

Product Felt Designed for Consumer Use

Insight: Compared to past medical tests (like COVID swabs), PE1 perceived this kit as more thoughtfully designed for lay users.

Quote:

“It is very consumer directed... I felt kind of in control throughout the test process.”

Design and Materials Shaped Perceived

Cleanliness and Sustainability

Insight: Paper materials enhanced the sense of sustainability and medical cleanliness, while unnecessary plastic parts (like suction cups) detracted from the experience.

Quote:

“I really like that it’s from paper... the suction cups gave a lot of distrust... it’s just waste.”

Lack of Medical Context Made the Process Feel

Uncertain

Insight: PE1 missed an official leaflet or explanation from a doctor, which would have added trust and a sense of legitimacy.

Quote:

“Maybe I am missing information in the sense that... I want to know what exactly is done to this.”

Initial Presentation Was Intimidating

Insight: The large kit made the test seem more daunting than it was, potentially discouraging action before opening it.

Quote:

“Before I opened it, it was quite intimidating because it’s a large package... it feels like it’s going to take a long time.”

Insights from interview with participant 2 evaluation test 27-05-2025

Sense of Control Through Sequencing

Insight: Clear segmentation into steps gave the participant a sense of control, although early uncertainty disrupted this slightly.

Quote:

“What gave me a sense of control is the different steps... pull, next, pull, next... felt like you had more grip on the process.”
“Only at the beginning, I had a feeling of lack of control when I looked at the second step.”
“That, for me, relates to control very much.”

Confidence Through Familiarity

Insight: Confidence in executing the test came from both clear steps and previous experience – uncertainty was limited to post-test packaging, not the test itself.

Quote:

“I felt like I did all the steps. I didn’t really doubt my actions related to the test.”
“I think it also helped that I’ve done multiple [tests] in the past.”

Feedback and Design Cues

Insight: Built-in design features like pull indicators and a triangle at the end provided clear, intuitive feedback.

Quote:

“The design where to pull... I didn’t doubt that at any moment.”
“The triangle, yes... that helped me feel comfortable or confident.”

Information Flow and Placement

Insight: The quantity of information felt right, but the placement created friction – especially at the beginning and with sequencing actions like

handwashing or removing underwear.

Quote:

“I lacked some information... I kind of lacked information on where to start.”

“The amount wise, I think first step, it was quite well portioned – just maybe the placement of it.”

“I would have liked to have something above here and move that to step two.”

Clarity and Comprehensibility

Insight: Instructions were overall clear, brief, and easy to follow, which contributed to a smooth experience.

Quote:

“Generally, quite clear, not too long sentences. It didn't leave me wondering what to do.”

“It did feel like first step was very dosed well... I like that a lot.”

Initial Overwhelm and Orientation

Insight: The biggest challenge was the start – a large, poofy appearance and lack of visual hierarchy made it hard to know where to begin.

Quote:

“In the beginning... I didn't really know where to look.”

“You already don't know where to look, and you see something big... might be distracting.”

“Having to start on the right made it overwhelming for me.”

Context Compatibility

Insight: The physical environment worked well with the test's features (like suction cups), and the design improved usability compared to past experiences.

Quote:

“It fit very well... I really liked that it hung. Wasn't struggling holding different things at the same time.”

“Very nice. Especially not if I compare it to previous tests.”

Material and Aesthetic Perception

Insight: The structure and materials (especially

paper) increased approachability, although the size and poofiness made it seem larger and slightly intimidating.

Quote:

“Feels quite sturdy... I like that it's paper and not plastic.”

“Poofy... adds to how much was in there. Might be distracting.”

“The paper really helps... in the approachability of it.”

Perceived Medical Reliability

Insight: Colors and materials gave a clean, trustworthy, and serious impression, appropriate for a medical context.

Quote:

“I like the colors... light blue... calm and clean and something you need to take seriously.”

Desire for Improved Orientation and Framing

Insight: The participant wanted clearer orientation cues – such as where to start and what the test is – suggesting the need for introductory framing.

Quote:

“Swap the stickers and the QR code so it's like top left... tell me this is what's gonna happen.”

“I know it's an STD test, but it doesn't say anywhere that it's an STD test.”

Insights from interview with participant 3 evaluation test done by inexperienced user 29-05-2025

Perceived Control Through Sequencing

Insight: PE3 appreciated the guided, step-by-step nature of the process, which gave a sense of control – even if it limited pre-planning.

Quote:

“I like that they were just telling me what to do, and I could do it.”

“Going step by step kind of felt like [control].”

“I could only see one big step at a time... I liked that it was already in that flow for you.”

Balance Between Clarity and Pre-knowledge

Insight: PE3 liked the information being well-dosed, but occasionally wanted a heads-up about what's coming. Still, they preferred this to feeling overwhelmed.

Quote:

"I did have points where I kind of wished I knew it sooner... But if I had read everything in one go, it would have also been slightly overwhelming. "I thought the amount in one flow was good."

Overall Simplicity and User-Centered Design

Insight: The process felt much simpler than expected. The participant attributed errors to themselves and appreciated how intuitive the design was.

Quote:

"I found it very simple. Actually much more simple than I expected."
"I felt like the places where I was messing up were very much on me."
"Before you kind of get the chance to ask a question... it already tells you what it is."

User-Centered Intent in Design

Insight: PE3 believed the test was designed with them in mind – focused on usability, prevention of confusion, and logical ordering.

Quote:

"It does really feel like they're making it as easy as possible for you."
"It's really forcing you to do one step at a time... just very clear where everything is and what their purpose is."

Pain Points: Stickers and Bag Components

Insight: The sticker created persistent confusion. Additionally, one ambiguous plastic item disrupted the experience slightly.

Quote:

"The first sticker... that did make me very confused."
"I still don't understand what the point is with that sticker."
"Not knowing what to do with the little shape in the little bag... that felt like an inconvenience."

Environmental Fit and Limitations

Insight: The bathroom setting, while appropriate for the test, lacked writing surfaces and tools – causing a practical mismatch.

Quote:

"Not being able to write my name on the sticker... I didn't have that space."
"Even though I think they recommend you to do it in the bathroom... my bathroom doesn't have writing space. Or a pen."

Medical Reliability Through Packaging

Insight: Although the visual design didn't necessarily look medical, the secure packaging reinforced the perception of reliability.

Quote:

"Everything was packaged safely... the cotton swab was in a little bag... just put in their own little bags."
"I don't think [appearance] influenced [medical reliability]."

Approachability Through Aesthetics

Insight: The kit appeared friendly and unthreatening. Elements like color, size, and the ability to mount it helped create a welcoming tone.

Quote:

"Very approachable. I thought the colors were cute."
"I liked that I could just stick it on my wall... just stand there and read."

Material Appreciation

Insight: PE3 admired the creative use of paper for functional components, which enhanced the test's tactile and sustainable feel.

Quote:

"I liked the materials. I liked that it was paper and that it also felt nice."
"I was very impressed... the folding thing with paper... very creative."

11.3 Recommendations

The results from the evaluation of the Stepwise kit resulted in 12 recommended areas for improvement of the product.

Redesign the envelope

The envelope the Stepwise kit was delivered in was too big and had an anonymous appearance. This resulted in a reluctant and anxious response from the user. The envelope needs to be redesigned in a way that the content is clearly from the GGD, while not revealing that it is a self-sample test, for privacy considerations. The envelope should be designed to be less intimidating, for example, by making it smaller or working with more appropriate colors and making it recognizable as a product of the GGD.

New ways of mounting the kit

For further development it should be taken into account that the suction caps are of good quality, because if the sample kit falls down while sampling, it would greatly disrupt the user experience. Other ways of mounting the Stepwise kit can be explored to prevent suction cap anxiety. The mounting of the kit on the wall clearly improved the user experience for the participants (Chapter 9.5), so it is a valuable functionality of the kit to incorporate in future designs.

Elaborated preparation steps

Preparation of the user is important. From the interviews it became clear that users want to be able to read through all the steps before starting the test. They can be encouraged to watch the instruction video or to slide the instructions out and back once before starting.

Introduction to the test

Users experienced a lack of introduction when using the test. They were still left with basic questions like what kind of test it is exactly and what happens to the sample once taken. This should be introduced more clearly in an introduction that can be added to the sample kit in the form of a letter.

Renewed instructions work well

The renewed tangible metrics used in the instructions seemed to work. Participants were better able to estimate the correct depth and exposure time, and this helped the participants to feel determined and relieved instead of insecure and doubtful.

No important information on the back of the kit

The introduction to the sample kit was now located on the back of the Stepwise kit. This side of the kit was not looked at by any of the participants. They explained that they did not want to turn the test over because of a fear that the components would fall out

Approachable look

The sample kit still looked overwhelming to the participants because of the components mounted on the front of the kit. The user still sees all these unfamiliar components and tries to make sense of them right away. The containers could, for example, hide the components a bit more, so that the first introduction with the test is easier on the eye.

Progress bar

Acknowledging the participant's progress seems to have the envisioned effect on their emotional experience. For further development, ways could be explored to exploit this effect even more. By, for example, making the progress bar even more prominent on the product. Or by giving written feedback to the user per step.

The hard cover

The confusion and doubt when placing the tube inside the hard cover can be taken away through a redesign of the cover to have the tube slide in in only one direction and to provide confirmation of correct placement of the tube, by means of a click or a better fit. The GGD already buys components that offer this type of hard protection. This component can replace the hard cover and the bag in the Stepwise kit. The Stepwise kit will have to be modified a little to accommodate this. That way, the GGD does not have to develop new components.

The QR-code

Users felt hesitant to scan the QR code even though they wanted more information. QR codes apparently are not a good way to provide video instructions to users. At least, we cannot rely on users scanning the QR-code as an introduction, because the probability of that step being skipped seems to be high. New ways of bringing video instructions to the user should be explored.

Size of the product

Due to the size of the product users felt like taking the sample would be an accordingly big task to do. This is a misconception that should not be created by the size of the product. So new ways to make the test kit and the components more compact should be explored.

Alteration of purchased components

Ideally, redesigning the purchased components would allow for more freedom in the exploration of more ways of improving the user experience. Even though this was out of the scope of this project, the research provided some indications of design directions for these components. For example, creating more clarity for the placement of the sticker on the tube, making it easier to have the urine test tube stand up, designing and incorporating a foldable, disposable cup for the urine test.

