# Digital Health Technologies in Mental Health: Insights Report

Health Innovation Network



@HINSouthLondon



healthinnovationnetwork.com





# Acknowledgements

- This project was led by the Health Innovation Network South London on behalf of NHS England.
- It would not have been possible without input from the 873 members of the public who engaged with our work.
- Special thanks also go to our Lived Experience Partner, Faith Smith, for her input throughout the design of this insights-gathering process.
- Thanks to over 40 organisations who disseminated the survey and increased the engagement of this work, showing much interest in how to improve patient experience and care in mental health.
- Thank you to the teams and colleagues at NHS England/ Department for Health and Social Care for their input and support throughout the project.



### How to read this report

- This report presents the findings from a large-scale survey, focus groups, and interviews with the public which took place between July and September 2023 as part of an insights-gathering exercise designed to explore the public's knowledge and experience of DHTs.
- Survey methodology was used to gather insights on what specific views people hold and focus groups were used to explore what might underlie people's views.
- Recommendations from this report have been drawn from the insight obtained from the survey and focus groups.
- This report uses the conventions of social science reporting: "a few" is used to indicate views which were mentioned infrequently, and "many" or "most" for views which are more frequently expressed. The use of "some" reflects the balance between these views which were mentioned by some participants, i.e. more than a few but not the majority of participants. This report focuses on perceptions rather than facts and any proportions used in the reporting should be considered indicative, rather than exact.
- Verbatim quotes are used throughout the report to demonstrate a viewpoint expressed during the qualitative work in the participant's own words.



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# O1 Executive Summary



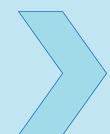
### Background and approach

The integration of digital health technologies (DHTs) has become a priority area in the healthcare landscape. NHS England have been developing a policy framework to clarify the standards needed by DHTs to enter the NHS market, whilst providing recommendations to healthcare providers and community stakeholders on how to increase public engagement and awareness of these products.

The Health Innovation Network were commissioned to gather insights from the public on their perspectives and feedback of using DHTs, in addition to understanding the barriers to engagement.

These insights were gathered via an England-wide survey and two focus groups of people who had used DHTs or had not used DHTs. Fieldwork was carried out between July and September 2023.

- One England-wide online survey between July and August 2023 with 873 responses
- Targeted users and non-users of DHT
- Focus on mental health products which diagnose, treat, and manage conditions



- **Two online focus groups** during September 2023 with 25 participants
- One group for users of DHT and one group for non-users
- Participants had a mental health condition and had accessed or were accessing care within the NHS

In addition, the **COM-B model** and participants' demographic characteristics were **used to explore** factors that might predict adoption behaviour.



### Key Insights – Drivers and barriers to engaging with DHTs

#### **Drivers to engaging with DHTs**

**Accessibility & flexibility-** DHTs offer more flexibility and better accessibility over traditional care, making it more convenient.

**Anonymity-** This was valued in the context of mental health care. Participants stated that the stigma of mental health sometimes made it more difficult to ask for help and liked the potential anonymity offered by DHTs.

**Personal recommendations-** Trusted sources such as friends, family, and trusted healthcare providers and perceived benefits are crucial in helping people engage.

**Post-recommendation support-.** Healthcare professionals are well-placed to provide optimal post-recommendation support for the optimal use of DHTs.

#### **Barriers to engaging with DHT**

**Preference for personal interaction-** There was a strong desire for human-led treatment, especially in mental health contexts, though there is DHT potential in prevention, early intervention, and recovery.

Perceived lack of effectiveness & awareness- Many potential beneficiaries are either unaware of or sceptical about DHT, showing a need for better education on their capabilities.

**Fear of limited treatment choices-** Participants raised concerns about losing the right to choose or change treatment if a DHT approach is not effective or suitable.

**Technology trust-** There were concerns over privacy and data security with new digital tools. Additional challenges were noted for those with mental health issues using technology.



# Key Insights – Adoption of DHTs

In our model, age, gender, confidence in using technology, and initial perceptions of the effectiveness of DHTs were significant factors influencing an individual's openness to using DHTs for managing mental health:

- Older individuals and women were generally less open to using DHTs.
- People who are less confident with technology and those who initially believe that DHTs are not effective in managing mental health were also less likely to be open to using these technologies.
- In contrast, access to digital technology and ethnicity did not significantly impact an individual's willingness to use DHTs in our model. We caveat this finding as our sample came from a solely self-selected online survey.



#### Recommendations

#### 1. Increase education & communication around DHTs

- Collaborative creation and spread of clear, evidence-based information on DHTs effectiveness and varied use cases.
- Wide-reaching dissemination targeting diverse settings, including health-focused ones, workplaces, and social media.
- Targeted education materials for older individuals and women.

#### Build healthcare professionals' confidence regarding DHTs

 Support for healthcare providers to confidently endorse different types of DHTs across the mental health pathway and understand their benefits and use cases.

# 3. Implement post-recommendation support for patients

- Support for healthcare providers to offer followups for patients using DHTs.
- DHTs should be interoperable for regular patient data review, ensuring clinical safety.
- Targeted training for healthcare providers on DHTs and their efficient use.

#### 4. Promote and evaluate hybrid care models

- Encourage DHTs that foster human connection, considering virtual consultations and peer support.
- Emphasise DHTs use at specific points in the care pathway, ensuring they do not replace humanled care, especially in mental health, at points in the pathway where human-led care is deemed crucial.



#### Recommendations

#### 5. Optimise DHT user experience

- DHTs should be engaging, person-centred, and provide a positive experience.
- Incorporate elements like gamification, rewards, and technical support to encourage sustained use.

#### 5. Ensure patient autonomy & flexibility

- Prioritise patients' right to choose and change treatments.
- Reinforce the notion that opting for or against DHTs will not affect a patient's treatment priority or outcome.

#### 7. Foster feedback and continuous improvement

 Establish regular feedback mechanisms for patients to inform both healthcare providers and DHT developers.

#### 8. Conduct further insights work

- Undertake insights gathering to assess DHT use and adoption in key clinical priority areas, comparing these findings.
- Explore, test, and evaluate existing literature and strategies for increasing DHT adoption, ensuring their feasibility, acceptability, and effectiveness prior to broader implementation.



# 02

# Background and approach

This section provides a detailed summary of the context and background to this insights gathering process. It also describes the methods used to collect and analyse data, in addition to a description of who participated.



# Background

As the healthcare landscape evolves, the integration of digital health technologies (DHTs) into routine care is becoming an area of increased priority.

NHS England is creating a policy framework designed to guide stakeholders in the digital health sector. This framework will establish clear standards for DHTs that aim to enter the NHS market.

This insights work by Health Innovation Network seeks to explore public perceptions, highlighting who is embracing DHTs, and equally importantly, the reasons behind the reluctance of others.

As part of a broader initiative, the insights from this study should be used to shape strategies to encourage wider adoption and trust in evidence-based DHTs across our healthcare community.



### Purpose and scope

# The purpose of this work was to understand the public experiences of DHTs in England.

- It sought to provide insights of public and patient experiences, preconceptions of using DHTs, and reasons for not engaging with DHTs in the context of managing mental health.
- In doing so, it aimed to highlight trends in people's experiences and behaviours toward DHTs to shape actionable recommendations which can be included in the NHS England's Digital Health Technology Policy Framework.
- It did not aim to measure any impact of DHTs on patient mental health outcomes.

#### The questions addressed in this insights work included:

- 1. What are the main drivers and barriers for the usage of DHT at key engagement points?
  - O Drivers and barriers pre-consultation?
  - Drivers and barriers during a consultation with a healthcare professional?
  - Orivers and barriers during adoption?
- 2. Do these drivers and barriers differ among groups of people?
  - What groups of people are more likely to be engaging with DHT and why?
  - What can support people to engage with DHT who don't think DHT work for them?



#### In the context of NHSE's Policy Framework:

 What can be done to encourage and support the uptake of DHT? By whom?

#### Methods

To explore public experiences, this insights process deployed a mixed-methods approach consisting of an England-wide survey and two online focus groups between July and September 2023.

# Survey

- One England-wide online survey between July and August 2023
- Targeted users and non-users of DHT
- Focus on mental health products which diagnose, treat, and manage conditions

# Focus Groups

- Two online focus groups during September 2023
- One group shaped for users of DHT and one group shaped for non-users
- Participants with mental health conditions who had accessed or were accessing care within the NHS



### Recruitment strategy

The survey recruitment strategy consisted of multiple methods:

- 1. Targeted Meta campaign: through a precision-focused campaign, the HIN connected with individuals using Meta platforms who were likely to have insights pertinent to our survey's objectives.
- 2. X (Twitter) campaign: the HIN utilised the reach of social media by initiating a dedicated campaign on X (formerly Twitter), tapping into a diverse demographic of potential respondents.
- **3. Stakeholder outreach**: the HIN undertook comprehensive outreach to over 1,500 key stakeholders within the mental health sphere. This included:
  - Healthcare institutions
  - Digital Health Technology companies
  - Voluntary Care Sector
  - Other public sector organisations, spanning education and police forces

The intent was to facilitate the wide dissemination of the HIN's survey, asking these stakeholders to share it across their patient communities, public forums, and various communication channels. Participants could opt-in for future engagement work at the end of the survey.

All participants for the focus groups were recruited via the survey opt-in option.



# Data analysis (1/2)

#### 1. Survey data

- i. Survey data were comprehensively cleansed and prepared prior to any analysis due to a high number of bot responses identified ( $\sim$ 1,000 responses).
- ii. Descriptive and inferential statistical methods were used to scrutinise the survey data which are presented through the findings section in narrative and graphical forms.
- iii. A binary logistic regression analysis was conducted to explore the characteristics that best predict the adoption behaviour of DHTs across all survey respondents. Responses were coded as either 'used DHT or open to it' or 'not used DHTs and not open to it'. This analysis aimed to explore the factors that influence whether an individual is open to using DHTs for managing mental health. The model was designed in line with the COM-B framework<sup>1</sup>, a comprehensive theoretical framework that suggests behaviour is influenced by three key components: Capability, Opportunity, and Motivation. In this analysis:
  - 'Confidence in using technology' was chosen to represent the 'Capability' aspect, reflecting an individual's psychological capacity to engage with digital tools.
  - 'Access to digitally enabled devices' represents the 'Opportunity' aspect, indicating the external factors that make the behaviour possible.
  - 'Initial perceptions of the effectiveness of DHTs in managing mental health' was selected to represent the 'Motivation' aspect, capturing the reflective processes that direct behaviour.



# Data analysis (2/2)

#### 2. Focus groups

- i. Transcripts from the two focus groups were systematically coded and analysed using Thematic Analysis.
- ii. A standardised framework approach was adopted for this process, ensuring consistent extraction of core themes from the discussions.

#### 3. Synthesis of data sources

- i. The insights highlighted from the survey and focus group analyses were synthesised.
- ii. The findings from this synthesis are presented in a cohesive manner in the subsequent 'Findings' section, alongside the survey data. Verbatim quotes have been included where they encapsulate a common theme or trend.



# 03

# Findings

This section begins with a description of the participants who took part in this process. Following this, insights from the survey and focus groups are presented through the following sections:

03.1 Pre-consultation

03.2 Consultation

03.3 Adoption



### Who participated in this process?

1. The survey sample consisted of **873 completed** responses which were analysed and are presented throughout this section.

Demographic breakdown of these:

- Age: 73% (n = 637) of the sample was aged between 16 - 44 years old
- Gender: 62% (n = 541) of the sample identified as female
- Ethnicity: 83% (n = 724) of the sample identified as 'White' (any background)
- Education: 62% (n = 541) of the sample had completed a university degree or equivalent

2. The project aimed to have wider representation from underrepresented demographics in the focus groups. In total, 25 individuals attended two focus groups.

Demographic breakdown of these:

- Age: 56% (n = 14) of participants were aged 45-74
- Gender: 60% (n = 15) of participants identified as female
- Ethnicity: 72% (n = 18) of participants were of a 'White' (any background)
- Education: 24% (n = 6) of participants had completed a university degree or equivalent



# Digital proficiency and access



The survey sample reported substantial digital connectivity, with 89% (i.e., 57% always and 32% most of the time) having consistent access to the internet and internet-enabled devices. In contrast, only a minimal fraction, accounting for 2 respondents, reported never having access.



Confidence in utilising the internet and related devices was predominantly high, with 64% of respondents feeling very confident, followed by 26% being somewhat confident. A minority, comprising 25 (3%) respondents, expressed a lack of confidence towards their digital proficiency.

When it came to the types of devices recently used:

- Mobile phones or smartphones emerged as the most common gadget among 87% of respondents
- Computers, both desktops and laptops, followed closely, with 79% of respondents
- Tablets, like iPads and Samsung Galaxy Tabs, made up almost half of the sample (48%)









# 03.1 Pre-consultation stage

The next slides focus on the themes and trends that related to preconceptions about DHTs, and thoughts or experiences people had prior to a consultation with a healthcare professional.

#### From the survey:

- Over half the sample (n = 532, 61%) reported that they had considered using DHTs.
- The rest reported they had not considered using DHTs prior to a consultation (n = 294, 34%).
- A small portion did not respond (n = 48, 5%).



# Pre-consultation: Drivers for early adopters

Over 40% (n = 359) of the survey sample reported having **tried DHTs before a consultation** with a healthcare professional. The main drivers for this early adoption:

- Accessibility and flexibility: 52% of respondents appreciated the easy accessibility of DHTs, while 40% valued the flexibility they offered compared to traditional care methods.
- Anonymity: DHTs provided anonymity for 34% of respondents, a crucial factor in mental health care.
- **Cost-effectiveness**: Moreover, 29% of respondents found DHTs to be a more cost-effective solution for their needs.
- **Recommendations and understanding of benefits**: 28% of respondents began using DHTs based on personal recommendations, while 18% did so after understanding the benefits that the technology could offer.

These themes were broadly supported by the focus groups, where some participants expressed enthusiasm for DHTs and being early adopters within mental health.



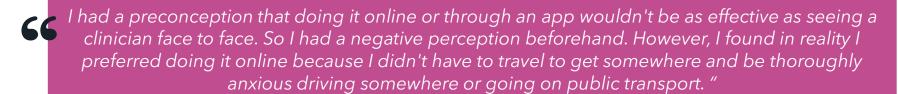
I liked the fact that doing it online was one-to-one and flexible where I was always reticent about perhaps getting involved in group activities for my mental health."



# Pre-consultation: General perceptions

Many of the focus group participants' initial encounters and preconceptions about DHTs were largely influenced by their past experiences with traditional care models. Two recurring themes were mentioned:

1. Driver: While there was an initial reluctance towards DHTs, some participants did appreciate the practical advantages of online interventions, like avoiding travel or group settings, which they found anxiety-inducing.



2. Barrier: Scepticism about the effectiveness of DHTs, especially for those who had either not found success with conventional treatments, like Cognitive Behaviour Therapy (CBT), or had been introduced to DHTs out of necessity rather than choice.



I wasn't so keen on using an app [previously]. The only reason I did was because I had been told I couldn't get an appointment in the past and of no sort during the pandemic. I did not feel like I was getting anything out of it because I have had problems with mental health for 25 years. So I felt like I had tried all of those already."



# Types of DHTs used

Respondents reported trying different types of DHTs before a consultation (n = 359):

- **Mobile applications:** 93% had utilised appbased digitally delivered therapy (such as SilverCloud).
- Online platforms: two-thirds (63%) accessed platforms that communicate symptom assessments to healthcare providers (such as Limbic).
- Chatbots/Web support: more than half (59%) engaged with automated or web-based mental health support systems.

Many of the **focus group participants** reported having tried a large number of app-based products which provided treatment, monitoring, and assessment for their mental health symptoms.

In addition, all survey respondents were asked to select sources of information about DHTs:

- **Social media**: 65% discovered DHTs through platforms like Facebook and Twitter.
- **Healthcare professionals:** over half (53%) were informed by healthcare professionals.
- **Educational/work institutions:** institutions such as schools and workplaces informed 36% of the respondents.

I have used IAPT CBT through a website and various apps with CBT and breathing techniques etc. I have bipolar, anxiety, depression, and am neurodivergent."



# Pre-consultation: Why people did not consider DHTs

Survey respondents were able to select **up to three** reasons why they had not considered using DHTs prior to consultation (n = 294):

- Preference for personal interaction: 79% preferred face-to-face treatments with professionals, emphasising the importance of human touch in healthcare.
- Awareness and perceived utility: 46% doubt DHTs benefits, and 42% were not aware of suitable DHTs, highlighting a need for better communication and education about DHTs capabilities.
- First-hand guidance and support: 40% wanted a healthcare professional's guidance on their mental health before exploring DHTs, indicating a desire for trusted advice before adopting new tools.

Reason	Count	%
I prefer to have a face-to-face treatment with a healthcare professional	231	79%
I didn't think DHT could benefit me	134	46%
I wasn't aware of DHT that could help me	124	42%
I wanted to talk to a healthcare professional about my mental health before trying DHT	119	40%
I had seen or heard negative reviews about DHTs through my social networks/news/media	44	15%
Other, please specify	34	12%
I didn't think I would have the skills to use DHT	20	7%
I didn't have access to the internet or devices to use DHTs	8	3%



# Pre-consultation: Why people did not use DHTs

Of the 532 respondents who had considered using DHTs, 173 respondents reported that they did not go on to use any DHTs, due to:

- Effectiveness and personal preference: 54% believed DHTs less effective than clinician consultations, with 49% preferring personal interactions for mental health discussions.
- Technology concerns: 24% had concerns about privacy and data security, and 23% had not found the right tool to assist them.
- Access: 20% found DHTs too costly.
- Awareness: 14% were not aware of their existence or how to use them.

Reason	Count	%
I don't think it would be as effective as speaking to a clinician	94	54%
I prefer to speak to a person about my mental health	84	49%
I don't think it would benefit me	55	32%
I have privacy and data security concerns about the technology	42	24%
I didn't find the right technology to help me	40	23%
It was too expensive to use	34	20%
I didn't know about or have awareness of DHTs	25	14%
It would be inconvenient for me to use	13	8%
I don't have access to DHTs e.g. I don't have an internet connection, mobile data, or access to a device	10	6%
Other, please specify	9	5%
I don't feel it's appropriate or acceptable in my culture	8	5%



# Barriers from non-adopters or non-users (1/2)

In the non-users of DHTs focus group, participants discussed the reasons for not engaging with DHTs. This revealed an interplay of concerns ranging from credibility and the perceived lack of human-led care to economic disparities and technical challenges. Many of these concerns were also highlighted in the survey. Four key themes were identified:

#### 1. Perceived lack of credibility of DHTs

Many participants were wary of tools or apps recommended by healthcare professionals who may or may not be familiar with these DHTs. There was a strong view that professionals should have firsthand experience or at least training in the tool that they are recommending. Linking DHTs to more traditional forms of care, they emphasised the need for the DHTs be formally assessed and understood by professionals.

I've certainly experienced clinicians say 'apparently' this is a good app or 'apparently' this is a good tool, but they've not checked it out themselves or had training. I think credibility is really important. If, they [clinicians] haven't tried it, they wouldn't do that with any other kind of treatment or therapy. If they're recommending it, why are they recommending it?

They're recommending it because they've had a look. They think it's a good tool."

#### 2. Lack of human component

Participants also described valuing the human aspect of care which they believed could not be replicated by an app. There was unease about the reliance on the individual to navigate and learn these tools, especially in cases where the user might already be dealing with increased symptoms.

If you actually want that care factor as you said earlier, you know that human factor, the human element to your care, you're not going to get it from an app and it's putting a lot of emphasis on you yourself to do an awful lot of things which you might not be able to do."



# Barriers from non-adopters or non-users (2/2)

#### 3. Concerns about being disadvantaged through opt-in/out of DHTs

Non-users of DHTs expressed reservations about how opting in or out of DHTs recommendations could affect their care and treatment journey. An example given was potentially being moved down a waiting list or removed from a waitlist for other treatment options.

I was offered three ways of engaging. I had to pick one. So having to say no to the other ones felt a little bit stressful because I felt like, 'oh, that's it'. And if I don't get on with it, then I'm going to lose the opportunity to go in person. I think someone needs to make that clear [that you won't lose your right to choice]."

#### 4. Lack of digital literacy

Some participants highlighted the issue of individuals who might not be comfortable or familiar with technology. Here they emphasised the need for more extensive support for these groups of people. In the context of mental health, there was a consensus that during low moods, engaging with an app or digital platform could be daunting, counterproductive or inappropriate. Examples were given for people with reduced concentration due to their condition or challenges reading would find it harder to interact with DHTs.

If you are not comfortable with technologies, online meetings etc., then you need more support. Access to tablets and smartphones, things like that. Not everyone has those... And if you're talking about mental health it does become a little bit more complicated. You really have to make sure that the support is there for those people that may be less able, less inclined."



# Respondent recommendations for raising awareness of DHTs

All survey respondents were asked to suggest ways to raise awareness of DHTs:

- Increasing 'advertisement', 'marketing', 'promotion', 'campaigns' and/or 'improved media' around what DHTs are, how they can be used, and benefits and success stories.
  - Specific channels mentioned included social media, official national and local NHS websites, leaflets, television, radio, via CAMHS.
     Official NHS branding could help build trust and via the NHS App.
  - Improving education around DHTs via educational forums such as public 'seminars', 'lectures', 'presentations', 'webinars' and 'workshops', or even schools assemblies.
  - To provide detailed insight and information to public discourse; for those wanting to engage in discussion and obtain more information.
- Improving awareness, knowledge and role of healthcare professionals
  - Healthcare professionals should be equipped with knowledge, skills and experience to promote, discuss and advocate for DHTs directly with patients.

Raising awareness of DHT was also identified as a key priority by both focus group participants, who valued genuine testimonials and endorsements not just from clinicians but also from patients who had benefitted from DHT

"Are they actors, set up?" But I think generally seeing and hearing about somebody that's used it for a condition that is similar can be really quite reassuring. Somebody rather than just a clinician saying, oh, this will work, this is what you need to do and put a face and nonclinical face to it as well."



# 03.2 Consultation stage

The next slides focus on the emergent themes and trends relating to experiences participants had during consultations with healthcare professionals where DHTs had been discussed or recommended:

- A total of 348 respondents (40%) indicated that they **had** been recommended DHTs during a consultation.
- 177 respondents (20%) mentioned they were recommended DHTs by their healthcare provider, but not during a consultation (e.g., via a text or leaflet)
- 320 respondents (37%) stated that they had not been recommended any DHTs.
- 28 respondents (3%) were unsure or couldn't remember whether they had been recommended DHTs.

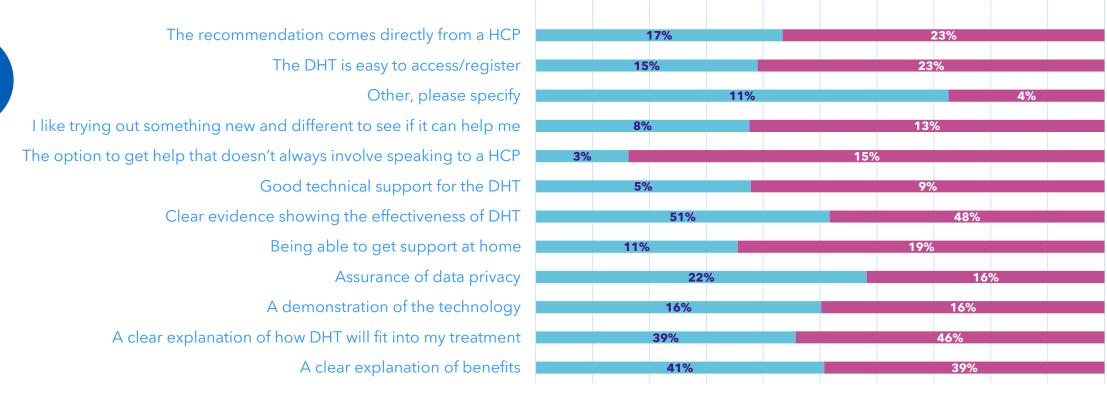
#### The top three sources of recommendations were:

- Therapists/Psychologists/Counsellors: 144 respondents (27%).
- GP Practice Nurse/ Allied Health Professional e.g., Mental Health Practitioner: 122 respondents (23%).
- General Practitioner (GP): 105 respondents (20%).



# Drivers for consultation among users and non-users of DHTs

The most important drivers for encouraging the uptake of a DHTs in consultation with a healthcare professional (HCP) were explored. The **top three factors for users of DHTs** were (1) clear evidence showing the effectiveness of DHTs, (2) a clear explanation of benefits, and (3) a clear explanation of how DHTs will fit into the treatment or care plan.



■ Have Used %

■ Have Not Used %



# NHS endorsement during consultation

The focus groups explored how trust plays a paramount role in acceptance of DHT, and the NHS role in endorsement of these tools. There were mixed views regarding the DHT being endorsed by the NHS at present.

- Participants tended to be more inclined to trust and adopt NHS-recommended DHTs because they felt the NHS badge offers a mark of authenticity and reliability.
- On the other hand, there was also an understanding that NHS endorsements do not automatically guarantee the highest quality. However, this view was not shared by all. A few participants also felt that the proliferation of DHTs had led to a paradox of choice, with users often feeling overwhelmed by the number of options available.

Anything I see NHS recommended or anything that has to do with the NHS instantly I have trust in it and I would be very encouraged to use it. If anything is therapist recommended or recommended by my GP, I would definitely be more inclined to use it than something that I've just read or heard about on social media.

I don't get a sense that there's a lot of public trust in the NHS. Certainly not when it comes to mental health. I have connections with people in the NHS and I know that what I get from them in terms of burnout and toxicity, targets and processes that are labelled as safeguarding but are doing more harm than good to the service user."



### Recommending DHTs during consultations

Respondents who had received a recommendation to use a DHTs (n=525) were asked about their consultation in relation to the DHTs:

**DHTs demonstration:** 32% of respondents indicated that they received a demonstration of the DHTs. A significant 50% felt they did not get a demonstration, with a substantial 31% "strongly disagreeing".

**Explaining benefits of DHTs:** 46% of the respondents indicated that their healthcare professional clearly explained the benefits of using DHTs for their mental health.

**Knowledgeable about DHTs features:** over half (56%) of respondents felt that their healthcare professional was knowledgeable about the specific features of DHTs they were recommending during consultation.

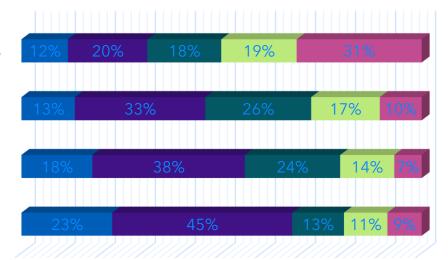
**Explaining access to DHTs:** 68% of respondents felt that their healthcare practitioner or provider adequately explained how to access DHTs, with 23% "strongly agreeing" and 45% "somewhat agreeing".

Provided a demonstration of digital health technology

Clearly explained the benefits of digital health technology to my mental health

Was knowledgeable about features of digital health technology

Explained how to access digital health technology (e.g. download an app, make an account)





■ Strongly agree ■ Somewhat agree ■ Neither agree nor disagree ■ Somewhat disagree ■ Strongly disagree

### Respondent recommendations for effective consultations

Survey respondents were asked to provide suggestions to support consultation with HCPs about using DHTs:

- Providing a practical demonstration of suggested DHTs delivered by healthcare professionals during consultation.
- Providing registration, set-up and DHTs support in person during consultation (i.e., support patient through the first steps).
- Highlighting clear and effective technical support pathways
- Having free access to DHTs via digital tools patients already use and are comfortable with (e.g., smartphones/NHS App).
- Assurance that DHTs offers appropriate level of personalisation (e.g., a personalised care plan).
- Providing key in-person communication and informational materials, such as:
  - If/how DHTs will be complemented by human interaction/oversight.
  - Why specific DHTs is offered over others, and whether there are alternative appropriate DHTs (i.e., providing patient choice where possible).
  - Assurance DHTs is not a less effective alternative to human-centred services (i.e., healthcare professional has confidence that tool is effective and appropriate for the individual and their specific case).
  - Assurance that uptake is reversible (i.e., can stop using and receive alternative support).
  - Testimonials from those that have successfully used DHTs.



# 03.3 Adoption stage

The next slides focus on the emergent themes and trends related to experiences participants had when adopting DHTs for their ongoing care:

- A total of 545 respondents (62%) indicated that they had used a recommended DHTs.
- 312 respondents (36%) stated they had not used any recommended DHTs.
- 16 respondents (2%) were unsure or could not remember.



## Perceptions of long-term use of DHTs for Mental Health

Survey respondents who had used DHTs (n = 545) were asked about their longer-term use. Views were generally split across the sample:

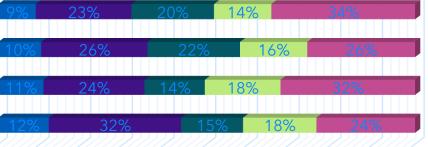
Continued use of DHTs: 44% of respondents either "strongly agreed" or "somewhat agreed" with using DHTs for their mental health in the long term.

Integrating DHTs into a routine: 35% of respondents affirmed (either "strongly" or "somewhat") that using DHTs for their mental health had integrated into their regular routine. However, a substantial 32% "strongly disagreed".

Perceived improvements in mental health: 36% of respondents reported that their mental health had improved as a direct result of using DHTs. Conversely, 26% "strongly disagreed" with this statement.

Clinician follow-up: 34% "strongly disagreed" that their healthcare professionals had discussed the use of the DHTs during followup appointments. This suggests that many healthcare professionals might not be routinely revisiting or assessing the use of DHTs with their patients.

My healthcare professional has discussed the use of DHT. My mental health has improved as a result of using DHT Using DHT has become a part of my regular routine I will continue using DHT for my mental health in the long term





10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



### Encouraging use and adoption of DHTs

Survey respondents who did not use DHTs (n = 312) were asked to choose three factors that would make them more likely to in use DHTs the future. The **top three reasons** were:

- Evidence of effectiveness: the most important motivator was the need for demonstrable proof of DHTs effectiveness. Almost half (48%) of the respondents emphasised the importance of having more evidence that DHTs work.
- **Professional oversight:** 43% of participants expressed that knowing their healthcare professionals can oversee or are fed back information about their progress (providing a clinical safety net) was a key driver.
- Post-recommendation support: 35% of respondents expressed the desire for more sustained guidance and support from healthcare professionals after the DHTs were introduced to them.

Reason	Count	%
More evidence that it works	149	48%
Knowing the data from DHT feeds back to a healthcare professional so that they can intervene if needed	135	43%
More support from a healthcare provider/professional after the recommendation	109	35%
Seeing and hearing from people like me, who have benefitted from using DHT	93	30%
Cost coverage or subsidies	74	24%
Greater privacy protections	73	23%
Easier sign-up or registration process	50	16%
Choice Having simpler DHT with fewer features	36	12%
Other, please specify	23	7%
Having support from family and friends to help me use DHT	21	7%



# Drivers to use and adoption: Optimising feedback and support

Focus group participants highlighted the importance of feedback, clinical safety, and support mechanisms as ways to encourage the adoption of DHTs:

- Elements of interaction going beyond automated or generic feedback. Personalised and clinical perspectives on progress was deemed important, and digitisation of progress markers was not perceived as enough. Patient/clinician interactions were perceived to be central, and participants wanted these to include healthcare professionals interpreting patient data in a meaningful way, motivating them and acknowledging their efforts.
- I personally think you need more than just feedback. There needs to be more than just pure feedback. There needs to be a clinician who can discuss with you what you've seen, what you've learned, how you've benefited from it can motivate you. If you're feeling a bit down to [encourage] you. There needs to be something clinical beyond just pure feedback."
- Inclusion of human interaction, whether it came from clinicians, coaches, or other support personnel. Such interactions provided motivation, contextual feedback, and a sense of not being alone. This was especially important in the realm of mental health, given its inherent complexity, which was highlighted throughout the discourse.
- They get messages each week from a coach or every other week with the actual feedback on how well they are doing. That works really well. Human interaction which I think is really needed in apps like this especially when it comes to mental health because it's so complex."
- There was also a strong view that DHTs needed a built-in system for emergencies. Current systems that simply direct patients to generic crisis lines were seen as inadequate in the context of DHTs for mental health. Participants desired a more tailored and empathetic emergency support mechanism.
  - I think a check-in by whatever means is comfortable with the person you're supporting is it would be really useful, but also to have somebody involved in the app who is there for emergencies because a lot of the time there's nothing they'll give you your local Crisis line and you'll get some board and regional nurse. It's not coordinated and you just feel like you're not supported when you hit those real lows."



### Drivers to use and adoption: Optimising use of DHTs

Focus group participants discussed how DHTs could be integrated in an optimum mental health pathway, which included exploring parts of pathways that were more or less amenable to the use of DHTs. Issues relating to accessibility and awareness emerged as key points:

- There were potential benefits of introducing DHTs as early intervention tools. Participants believed that equipping individuals with digital resources during the initial signs of distress might act as a buffer, preventing the further deterioration of mental well-being. However, there was a notable apprehension among many participants of introducing DHTs when someone is already experiencing a mental health crisis. There was some frustration regarding the sporadic and perceived ill-timed introduction of DHTs to patients. Many participants felt that these tools were signposted during the most acute episodes of mental health and not the right time to introduce and/or use in the person's care.
- Perhaps at an earlier stage, when I think 'I'm going in the wrong direction, I'm going down a bit downhill here.' Maybe having had access to these digital tools? Earlier May have helped, so there is an issue of whether they are gatekeeping and only letting a certain number of people access them?"
- It was suggested a more proactive approach should be taken with patients, particularly those with identified mental health conditions, to signpost to DHTs well before experiencing a crisis, as a prevention or early intervention measure. Weaving DHTs into mainstream NHS platforms was identified as an efficient way to optimise their use within the mental health pathway.
- When they are often offered is when you ring crisis and you've gone to a doctor and you're saying I'm having trouble and they refer you onto this, that really isn't the right place for these DHTs to be introduced. If anything, they should come after face-to-face interventions or earlier. There should be something that you can access when you're starting to feel a little bit wobbly, but not got to a crisis point."
- There was consensus among participants that it might not be feasible for those severely affected by serious mental illness to rely solely on self-driven digital mechanisms. They felt that the severity of some mental health conditions could act as a barrier to engaging independently with these tools.
- I think they [NHS/ DHTs Industry] need to be really honest about who this is going to help, because I feel like the apps are trying to be everything to everybody and they are given a one size fits all and that really isn't going to work here [in the context of mental health]."



### Barriers to use and adoption of DHTs

- The top three reasons cited by survey respondent who did not use DHTs (n = 312) were:
  - Preference for human interaction: the most dominant reason, resonating with almost half of the respondents (47%), was a preference for direct interactions with healthcare professionals rather than relying on DHTs.
  - Scepticism about effectiveness: 34% were sceptical of DHTs capacity to benefit their mental health.
  - Forgetfulness and adaptability: 22% of respondents felt they would overlook using it, suggesting potential concerns about the habitual integration of DHTs into their lives. Moreover, 10% believed it did not fit into their routine, further highlighting adaptability challenges.

Reasons for DHT adoption	Count	%
I prefer speaking to a healthcare professional about my mental health	147	47%
I don't think the DHT can help me	106	34%
I would forget to use it	69	22%
Other, please specify	62	20%
Privacy or data concerns	59	19%
Lack of support to start using DHT	57	18%
The cost of DHT	41	13%
It didn't fit into my routine	30	10%
Technical glitches once I started using it	19	6%
Difficulty using the features of DHT	18	6%
I don't have enough time to use it	18	6%
Difficulty signing up or registering for DHT	16	5%
I didn't have what I needed to be able to access it e.g. a device, internet connection	9	3%
Difficulty downloading DHT to your device	8	3%



### Exploring the preference for human led care in Mental Health

Participants in the focus groups expressed a strong preference for human-led care over digital-only options. Their reasons including:

• Scepticism about a perception for a push for DHTs as cost-saving measures by healthcare providers rather than as genuine care solutions. Many felt that they were directed to these platforms to reduce costs and clear waiting lists rather than to provide quality care.

The digital things I've tried have felt to me like an excuse to get me off the list."

- Impersonal nature of DHTs. The digital shift represented for them a depersonalisation of care where patients felt more like numbers on a list rather than individuals needing personalised care. The lack of human interaction was emphasised, with many participants mentioning the irreplaceable value of human understanding, empathy, and immediate response, especially during crises. This "human touch", they argued, was vital to understanding context and nuances that digital platforms could miss.
- When you're using apps and you're using online things you are not getting those instant answers that are going to make you feel a lot better. And at the time I needed someone to tell me that that's symptoms were normal and they can answer all types of questions."
- Feeling discomfort and even upset from using DHTs (linked to the above), this was primarily because they felt that the apps did not provide personalised care and tailored support to their own unique experiences.
- I needed somebody to have instant answers to my questions, although that sounds selfish, but I was suffering with symptoms. I wasn't sure whether it was medical, whether it was part of the anxiety, and I needed somebody right there in front of me."
- While there was a preference for human-led care during crises and intervention, there was an appreciation for DHTs that incorporated some level of human-like interaction. For instance, platforms that provided instant, tailored responses or gave the impression of a human touch were deemed more acceptable and useful. This was shown by one participant's mention of using the ChatGPT app as it offered immediate feedback and felt more personal, despite not being human-led.
- It's called chat GPT and when I'm having a wobble I use that because I feel like I'm texting somebody. I know it's not somebody real, but I feel like I'm getting an instant answer. Instant contact and you kind of feel like it's a little bit more personal and there's somebody there and obviously the advice they give you is you know, spot-on advice. So it's all about having that, that human support.."



# Predicting digital health technology behaviours

Finally, the HIN sought to understand a little more about characteristics which predict openness to using and adopting DHTs. The exploratory predictive model tested by HIN found that:

- 1. Age older individuals were found to be less open to using DHTs compared to younger individuals. Therefore, as age increases the likelihood of being open to using DHTs appears to decrease. This was not related to specific age ranges in this model.
- 2. Gender women were generally less open to using DHTs compared to men.
- 3. Ethnicity ethnicity did not appear to be a strong predictor of someone's openness to use DHTs.
- 4. Confidence in using digital devices and the internet individuals who were less confident in using technology, such as internet enabled computers, tablets, or smartphones, tended to be less open to using DHTs. This suggests that boosting technology confidence might be a key step in encouraging the use of DHTs.
- 5. Access to digitally enabled devices there was not a strong relationship between access to digital technology and openness to using DHTs. This means that whether an individual has good or poor access to digital technology does not seem to impact their willingness to use DHTs.
- **6. Perceived effectiveness of DHTs -** individuals who initially thought that DHTs were not effective in managing mental health were much less likely to be open to using these technologies. This highlights the importance of positive perceptions and expectations regarding the effectiveness of DHTs.



# 04

# Conclusions

This work engaged over 870 members of the public to explore experiences and sentiments towards DHT in the context of mental health. Participants offered useful and nuanced insight about the drivers and barriers to uptake of DHTs, and engaged in productive discourse around the opportunities to optimise and embed them into practice. Overall, there was openness toward digital adoption in the sphere of mental health and a recognition that DHTs can help make services more efficient and user experience better. However, there was also a sense that more work on engaging, educating, and communicating with the public and healthcare professionals is needed to build more acceptability of DHTs.



# Conclusions: Key drivers

Key drivers for engagement and adoption behaviours toward DHTs were:

- Accessibility and flexibility Participants highly valued the convenience and flexibility that DHTs offer compared to traditional care methods, indicating that these are strong selling points for DHTs adoption that should be communicated broadly.
- Anonymity The anonymity provided by DHTs was appealing to a significant number of participants,
  especially in the context of mental health care.
- **Personal recommendations and perceived benefit -** Some participants were influenced to use DHTs based on recommendations from people they know personally and their own understanding of the benefits that DHTs could provide.
- **Post-recommendation support/feedback -** Participants expressed the importance of guidance and support from healthcare providers post-consultation. In particular, there was an emphasis on rigorous clinical safety and oversight to use DHTs in the context of mental health care.



## Conclusions: Key barriers

The findings provided a detailed understanding into the barriers which patients, particularly in mental health pathways, feel they are faced with when offered DHTs as part of their care:

- Preference for personal interaction There was a preference for human-led treatments, emphasising the valued role of human connection in healthcare. This sentiment extended specifically to discussions regarding mental health- this factor was emphasised as a primary barrier at all three engagement points (preconsultation, during consultation, and adoption) and remained a prominent theme during the focus group discussions. However, participants also acknowledged the opportunities for DHTs at specific touchpoints within a care pathway, namely early intervention, assessment, and recovery support.
- **Perceived effectiveness and awareness -** A large portion of participants were either unaware of suitable DHTs or were sceptical about their effectiveness compared to traditional (human-led) care, indicating a clear need for enhanced education and communication about DHTs capabilities to the general public, and in healthcare settings specifically.
- Maintaining patient choice Linked to awareness, concerns were raised about potentially losing treatment options and being deprioritised in treatment queues when opting for DHTs.
- **Data and privacy -** Concerns related to privacy, data security, were notable barriers, highlighting issues related to trust. In particular, the additional challenges that may be faced specifically by individuals with mental health attempting to use technology.



#### Limitations

- The predominantly **online mode of data collection** may have biased the participant pool towards individuals with a higher degree of digital literacy. This means that those who are not as digitally competent and/or confident, or those without regular online access, may not have been adequately represented in our findings. This selection could potentially favour people with more positive perceptions towards the acceptance and usability of digital tools.
- This work is centred around the **application of DHTs specifically within mental health care**. Therefore, the views and perceptions expressed might not be representative of opinions towards DHTs deployed in other healthcare conditions / clinical specialities.
- **No specific digital health technologies were evaluated** during these sessions. As such, participant feedback may have been influenced by their experiences with a broad range of digital health tools, some of which might not meet the standard criteria for DHTs set out in the NICE Evidence Standard Framework<sup>1</sup>.
- The findings from the predictive model should be interpreted with caution as they have not been compared against other published data and were intended to provide an exploratory view of the trends which might benefit from further in-depth analysis and validation. Secondly, participants from the survey were self-selected which may introduce a biased sample.



# 05

# Recommendations

These recommendations have been provided to improve the engagement, awareness and uptake of DHT, particularly in the sphere of mental health pathways. Each aims to increase capability, opportunity, or motivation barriers which exist in the context of DHT adoption behaviour.

Capability

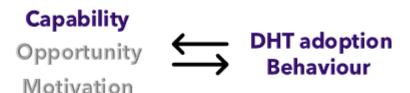
Opportunity

DHT adoption behaviour

Motivation

Recommendations are also provided in the context of important engagement points (pre-consultation, consultation, and adoption) and are targeted to different stakeholders, where appropriate.



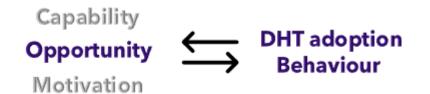


#### 1. Develop comprehensive education and communication strategies

- NHS policymakers, DHTs developers, and healthcare providers should produce and disseminate clear and tailored evidence-based information about the variety and potential benefits of DHTs (in its broader meaning, and of specific products). This should include patient stories and testimony, evidence from peer-reviewed studies, and easy-to-understand educational materials in accessible formats for a wide-reaching audience. It must also include information regarding data use, privacy and security of data, and consent to increase understanding of DHT standards within the NHS.
- **Wide-reaching campaigns** should be used to raise the public's awareness and understanding of the value of DHTs in mental health and use a wide range of media channels (both traditional and social media) pre-consultation. In particular, it would be valuable to educate the public on the breadth of DHTs available beyond therapeutics and treatment.
- **Targeted education campaigns**, developed through co-production, should be used to address the specific concerns of older individuals and women, and people who are not confident using technology who were identified as generally less open to using DHTs.

The work we conducted highlighted a lack of awareness of relevant, evidence-based DHTs from the public's perspective, that could be accessible via self or clinician referral, and were not app-based interventions. This recommendation aims to address this recurring theme which was evident from the survey responses, in addition to the qualitative fieldwork conducted. Moreover, participants expressed their lack of awareness was a potential barrier to engagement with DHTs, particularly in the pre-consultation stage. In addition, participants reported wanting to see more evidence of effectiveness related to their conditions and have transparency over data privacy concerns, at pre-consultation, and in consultation.





#### 2. Enhancing healthcare professionals and patient interaction

- Healthcare providers should feel confident and able to endorse DHTs to patients during consultations.
- **Healthcare providers** should be fully informed on the appropriate options of DHTs available to patients across the mental health pathway to increase engagement during consultations. This includes understanding the benefits of specific DHTs (and communicating these) and reassuring patients of their utility in providing quality care.

The findings demonstrated that participants had different and split experiences during consultations where DHTs were recommended or discussed with a clinician. Specifically, there was a common view that clinicians were not consistently knowledgeable about DHTs relevant to their patients' care, nor were they always able to articulate the benefits of using these technologies. Participants from both surveys and focus groups identified perceived effectiveness as a barrier to engaging with DHTs. To address this issue, the recommendation focuses on ensuring that healthcare professionals are well-informed and actively involved in joint-decision making, particularly at key moments when patients might consider adopting DHTs.



# Capability Opportunity Motivation DHT adoption Behaviour

#### Recommendations

#### 3. Enabling a post-recommendation support system for adoption

- **DHTs developers** should provide interoperability with clinical systems to allow for regular review of patient data/progress to provide a clinical safety net.
- **Healthcare providers** should adapt their care pathways to fully integrate DHTs so that using and reviewing data that come from DHTs becomes part of standard care.
- **Healthcare providers** should be supported to develop a structured post-recommendation support system where they are able to follow up with patients who have been recommended DHTs. This might involve checking on the patient's progress, addressing any issues or concerns, and adjusting the care plan as necessary in consultation and beyond.

The insights highlighted a need for support following the recommendation of DHTs. Participants expressed a desire for assistance to ensure they continue to use DHTs as intended. Acknowledging the challenges inherent in adopting new practices, this recommendation is in part directed at developers to focus on the interoperability of their products with existing clinical systems, thereby facilitating smoother integration and adoption processes. Moreover, the recommendation is underpinned by substantial evidence indicating that patient support, structured and overseen clinically, is crucial in encouraging the adoption of self-management practices for chronic conditions<sup>1</sup>. This approach aims to ease the transition for patients and clinicians, promoting the effective and sustained use of DHTs in managing long-term health conditions.

<sup>&</sup>lt;sup>1</sup> Dineen-Griffin, S., Garcia-Cardenas, V., Williams, K., & Benrimoj, S. I. (2019). Helping patients help themselves: a systematic review of self-management support strategies in primary health care practice. PloS one, 14(8), e0220116<sup>-</sup>

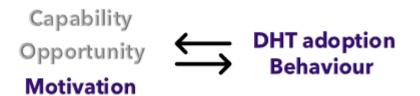


# Capability Opportunity Motivation Capability DHT adoption Behaviour

#### Recommendations

- 4. Introduce and evaluate hybrid models of care which preserve the preference for human-led care at key touchpoints
  - i. NHS policymakers and healthcare providers should encourage the adoption of DHTs that incorporate elements of human connection, such as virtual consultations with healthcare professionals or peer support groups, to address the preference for elements of personal interaction within care pathways.
  - **ii. Healthcare providers and commissioners** should emphasise DHTs in prevention, early intervention, assistance with diagnosis or assessment, and recovery pathways. While DHTs present an innovative supplement, they should not replace human-led treatments but should be used to improve a treatment pathway by enhancing monitoring and communication with healthcare providers where possible, especially in the mental health context. Hybrid care models, combining human-led consultations with digital elements, might serve as an effective approach to maintaining essential human touchpoints throughout care pathways.
  - **NHS policymakers** should commission evaluation to maintain the effectiveness and patient satisfaction of hybrid care models to ensure that the highest standards of care are maintained and commissioned in the future.

The findings demonstrated a desire for human-led mental health care throughout the pathway, although there was acceptability for using DHTs in prevention, early intervention, assessment, and recovery. This recommendation aims to provide a starting point for policymakers, commissioners, and providers to ensure this preference is considered in new models of care and increases opportunity for patients to adopt effective and evidence-based DHTs.

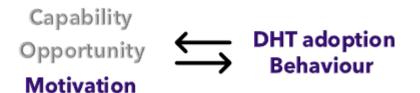


#### 5. Develop engaging, accessible, and functional DHTs

- **DHT developers** should create products which are person-centred and engaging to optimise uptake and continued use. Personalisation and incentivisation structures such as rewards, gamification, and clear progress metrics, in particular, can support this.
- ii. **DHT developers** should ensure DHTs are functional and provide a positive user experience. Effective technical support should be offered alongside any DHTs to encourage uptake and support longer-term use.

Beyond effectiveness, participants stated that providing a positive user experience through flexibility, accessibility and generally offering an advantage over traditional care means are important drivers for adoption. This recommendation ensures that potential users remain motivated and engaged with DHTs throughout their intended use.



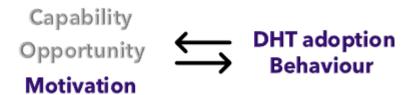


#### **6.** Communicate patient autonomy and choice regarding DHTs

- **NHS policymakers** should ensure that patients are not disadvantaged by opting for DHTs over traditional care, or vice versa.
- **Healthcare providers** should communicate clearly, where a chosen method of care does not have the desired results or satisfaction, that patients maintain the flexibility and right to explore alternative options within their care pathway. This will help address any public misconceptions about being relegated to a less prioritised position in the 'treatment queue'. This point specifically should be widely broadcast to patients offered DHTs, in order to foster trust and encouragement to engage with DHTs.

This recommendation was developed in response to concerns raised by participants about the fear of facing disadvantages based on their decision to use or not use DHTs in their healthcare journey. They expressed apprehension that opting in or out could impact their care, and this misconception was identified as a significant barrier to the acceptance and use of DHTs. To address this, the recommendation focuses on enhancing patient motivation to adopt DHTs. It emphasises the importance of keeping patients thoroughly informed about their treatment options and the strategies to address any issues if a chosen approach proves unsuccessful. The goal is to ensure patients feel confident and knowledgeable in their healthcare decisions, reducing hesitancy in adopting DHTs.





#### 7. Ensure feedback and continuous improvement

- **Healthcare providers and DHT developers** should set up mechanisms to gather regular feedback from patients. This would aid developers in designing DHTs that integrate seamlessly into people's routines. This would also aid healthcare providers in addressing any emerging concerns in real-time.
- ii. Healthcare providers and DHTs developers should help to tackle health inequalities by ensuring that feedback is gathered from individuals at risk of exclusion.

Evidence-based DHTs hold significant potential in reducing health inequalities by providing accessible and personalised healthcare solutions to diverse populations. However, to fully realise this potential, it's important to understand and address the needs of those at risk of exclusion (such as people with mental health conditions). This recommendation aims to address this by incorporating insights from people who are often marginalised or overlooked in healthcare, so that DHTs can be tailored to be more inclusive and effective. This approach ensures that DHTs are equitable and accessible to all, but also helps in identifying and bridging gaps in healthcare delivery, thereby contributing to the reduction of health disparities.



#### **8.** Conducting future research and insights work

- i. Additional research and insights-gathering activities should be undertaken to evaluate the factors influencing the use and adoption of DHTs in other key clinical areas, such as cardiovascular and respiratory care. This will help determine if the findings from the current study align with these other areas.
- ii. There is a wealth of existing literature and knowledge on potential strategies that could effectively increase the adoption of DHTs which address some of the recommendations outlined in this report. These strategies should be thoroughly explored, tested, and evaluated for their feasibility, acceptability, and effectiveness before being implemented on a larger scale.



10th Floor, Becket House, 1 Lambeth Palace Road, London SE1 7EU Closest station: Waterloo

- 020 7188 9805
- @HINSouthLondon
- healthinnovationnetwork.com

