



Evidence generation plan for digital health technologies to help manage symptoms of psychosis and prevent relapse

Implementation support

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1 Purpose of this document

NICE's assessment of digital health technologies to help manage symptoms of psychosis and prevent relapse recommends that more evidence is generated while the technologies (AVATAR Therapy, SlowMo and CareLoop) are being used for adults in the NHS. The technologies can only be used once they have appropriate regulatory approval including NHS England's Digital Technology Assessment Criteria (DTAC) approval.

This plan outlines the evidence gaps and what real-world data needs to be collected for a NICE review of the technologies again in the future. It is not a study protocol but suggests an approach to generating the information needed to address the evidence gaps. For assessing comparative treatment effects, well-conducted randomised controlled trials are the preferred source of evidence if these are able to address the research gap.

The companies are responsible for ensuring that data collection and analysis takes place. Support for evidence generation will be available through a competitive process facilitated by the Office for Life Sciences, pending business case approval. This will be in the form of funding for evidence generation consortia, bringing analytical partners and implementation sites together with companies for evidence generation.

Guidance on commissioning and procurement of the technologies will be provided by NHS England. NHS England is developing a digital health technology policy framework to further outline commissioning pathways.

NICE will withdraw the guidance if the companies do not meet the conditions in section 4 on monitoring.

After the end of the evidence generation period (3 years, or less if evidence is available), the companies should submit the evidence to NICE in a form that can be used for decision making. NICE will review all the evidence and assess whether the technologies can be routinely adopted in the NHS.

2 Evidence gaps

This section describes the evidence gaps, why they need to be addressed and their relative importance for future committee decision making.

The committee will not be able to make a positive recommendation without the essential evidence gaps (see [section 2.1](#)) being addressed. The company can strengthen the evidence base by also addressing as many other evidence gaps (see [section 2.2](#)) as possible. This will help the committee to make a recommendation by ensuring it has a better understanding of the patient or healthcare system benefits of the technology.

2.1 Essential evidence for future committee decision making

Clinical effectiveness in the long term

Evidence is needed on the clinical effectiveness of the technologies when used with or without standard care psychological therapies, including in the long term. This will help the committee to understand whether the technologies are clinically and cost effective.

Evidence is needed on:

- change in target psychosis symptoms managed by the technology (for AVATAR Therapy and SlowMo) or monitored by the technology (for CareLoop)
- rate of relapse or worsening of symptoms and time to relapse
- functional outcomes including social functioning and personal recovery.

Healthcare resource use

Using the technologies could free up resources that could increase access to treatment or reduce waiting times. More information is needed on resource use to assess whether the technologies are cost effective, including:

- implementation and training costs associated with using the technology in the clinical pathway

- healthcare professional grade and time needed to support or deliver treatment
- resource costs associated with relapse such as hospital stay costs.

Adverse events related to the technologies

Some serious adverse events have been reported in the published studies for all the technologies. Safety monitoring and more data on adverse events would help the committee decide whether the technologies can continue to be used safely in the NHS in the longer term and understand which adverse events are directly related to use of these technologies.

2.2 Evidence that further supports committee decision making

Engagement with the technologies

More evidence is needed to:

- assess uptake of the technologies and completion rate
- assess patient and staff experiences of using the technologies
- understand how use varies in particular groups
- assess how frequency of use (continued or repeat use) affects clinical benefit.

Information on the characteristics of people using the technologies is also needed to evaluate differences in access to the technologies and the potential impact on health inequalities.

3 Approach to evidence generation

3.1 Evidence gaps and ongoing studies

Table 1 summarises the evidence gaps and ongoing studies that might address them. Information about evidence status is derived from the [external assessment group's report in the supporting documentation](#); evidence not meeting the scope and inclusion criteria is not included.

The table shows the evidence available to the committee when the guidance was published. Some studies listed as ongoing may now be published.

Table 1 Evidence gaps and ongoing studies

Evidence gap	AVATAR Therapy for managing symptoms	SlowMo for managing symptoms	CareLoop for preventing relapse
Change in targeted psychosis symptoms	Evidence available	Evidence available	Limited evidence
Long-term change in targeted psychosis symptoms	Limited evidence Ongoing studies	Limited evidence	No evidence
Rate of relapse or worsening of symptoms	No evidence	No evidence	Limited evidence Ongoing study
Resource use	Limited evidence	Limited evidence Ongoing studies	Limited evidence
Adverse events related to the technology	Evidence available Ongoing studies	Evidence available	Limited evidence
Engagement with technology	Limited evidence	Evidence available Ongoing study	Limited evidence

3.2 Data sources

There are several data collections that have different strengths and weaknesses that could potentially support evidence generation. [NICE's real-world evidence framework](#) provides detailed guidance on assessing the suitability of a real-world data source to answer a specific research question.

The Mental Health Services Data Set (MHSDS) is a mandated national data collection that could collect the necessary data. But it may not routinely collect all the outcome measures outlined in this evidence generation plan. Also, data may not have been submitted for all people using mental health services and there are potential issues with data quality. NHS England has suggested that modifying the MHSDS could take up to 2 years, so it is unlikely that modification could happen in time to support data collection for this evidence generation plan.

Some mental health trusts with technology systems, such as the Clinical Record Interactive Search (CRIS) system, allow anonymised data from electronic health records to be shared for research. This could support creating a dataset based on information from the different trusts' clinical records, which may include data on clinical outcomes of people with psychosis disorders. This could be used to increase and improve the data collected from the study proposed in this plan.

The quality and coverage of real-world data collections are of key importance when used in generating evidence. Active monitoring and follow up through a central coordinating point is an effective and viable approach to ensure good-quality data with broad coverage.

3.3 Evidence collection plan

A prospective controlled cohort study design is suggested as an approach to addressing the evidence gaps. This could incorporate a qualitative survey.

In such a study, 2 or more groups of people are followed over time and their outcomes compared. The studies should enrol a representative population to include adults with symptoms of psychosis, or who are at risk of relapse, who would likely be offered a digital technology in usual practice. Companies will need to clearly define their intended population.

The companies should prespecify the claimed benefits and position of their technologies

in the clinical pathway for psychosis to justify their selected comparison population. The intended use of the technology should be clearly described. For example, continued or repeat use, as a component of standard care psychological intervention, or as a standalone intervention. Comparators for technologies for managing symptoms of psychosis (AVATAR Therapy and SlowMo) include cognitive behavioural therapy for psychosis (CBTp), other psychological interventions such as group therapy or supportive counselling and being on a waiting list. For the technology that aims to prevent relapse (CareLoop), comparators include healthcare professional review and follow up. The comparator or review protocol should be clearly described.

For comparing the technology with active treatment, start of follow up should be from the point of starting treatment. For comparing the technology with being on a waiting list, start of follow up should be from the point of referral for treatment. Eligibility criteria (for example, indication for referral and an assessment of the risk and suitability of digitally enabled therapy for the person), and the time point of starting follow up should be reported. Eligibility criteria and the point of starting follow up should be consistent across comparison groups to avoid selection bias.

Data should be collected for all groups, at appropriate intervals from the start of follow up for a minimum of 6 months, and ideally for 12 months. Comparator data could be from different centres, with comparable populations and care pathways, that do not have access to the technologies. Ideally multiple sites should be enrolled, representing the variety of care across the NHS. The included services for standard care and the treatment options must be described, including their composition and, ideally, performance against national outcomes for the relevant condition should be reported.

Using digital technologies may worsen symptoms of delusion and paranoia in some people. So, outcomes of people using the technologies should be closely monitored and collected, with interim analyses and clear escalation plans specified in protocols.

Because the suggested study design is non-randomised, it is important that appropriate steps are taken to balance confounding factors across the comparison groups at baseline. This includes clearly defined and consistent enrolment criteria across the comparison groups and techniques, such as matching or adjustment approaches (for example, propensity score methods) to ensure comparable groups. High-quality data on patient characteristics is needed to correct for differences and to assess who the technologies may not be suitable for. Important confounding factors should be identified, with input from clinical experts during protocol development.

Incomplete records can also lead to bias if unaccounted for. Loss to follow up, with reasons, should be reported over the data collection period. Data collection should follow a predefined protocol and quality assurance processes should be put in place to ensure the integrity and consistency of data collection.

An enrolment period should be included and be sufficient to account for learning effects when implementing the new technologies.

Data may be collected through a combination of primary data collection, routine NHS data sources, and through the technologies themselves.

The study should consider uptake of treatment among people who were eligible for the technologies. By also considering historical data, the study may identify changes in overall access to treatment when this is a claimed benefit.

Feedback can also be collected through a survey or structured interviews with people using the technologies. The robustness of survey results depends on comprehensive distribution across people who are eligible and on the sample being representative of the population of potential users.

See [NICE's real-world evidence framework](#), which provides guidance on the planning, conduct, and reporting of real-world evidence studies. This document also provides best practice principles for robust design of real-world evidence when assessing comparative treatment effects using a prospective cohort study design.

3.4 Data to be collected

The following data should be collected for the technologies and their comparators to address the evidence gaps:

- Baseline data including:
 - age and sex
 - current and previous treatments including antipsychotic medicine, other medicines, and psychological therapy
 - medical history including duration of psychosis symptoms, current psychiatric comorbidities, misuse of alcohol or use of drugs

- symptom severity
 - the indication for referral
 - risk classification or other characteristics that may be related to the likelihood of choosing to access the technology, for example, socioeconomic status, language, ethnicity or region, or important confounders identified with input from clinical experts
 - assessment of whether digital treatment is suitable for the person, and willingness to have it, with reasons for declining the treatment.
- Clinical-effectiveness measures taken from baseline at appropriate time intervals for a minimum of 6 months to ideally 12 months:
 - for AVATAR Therapy: assess auditory verbal hallucinations using the Psychotic Symptoms Rating Scales, auditory and hallucinations (PSYRATS-AH)
 - for SlowMo: assess distressing thoughts or paranoia using the Psychotic Symptoms Rating Scales, delusions (PSYRATS-DEL) and the Green et al. Paranoid Thought Scales (GPTS)
 - for CareLoop: monitor symptoms to prevent relapse using the Positive and Negative Syndrome Scale (PANSS)
 - for all 3 technologies: assess functional outcomes (for example, using the Work and Social Adjustment Scale [WSAS], or the Global Assessment of Function [GAF] Scale)
 - for all 3 technologies: record rate of relapse (that is, need for urgent review, change in antipsychotic medicine, referral to crisis care or hospital for psychiatric treatment) and time to relapse or worsening of symptoms.
 - Safety indicators monitored and occurrence of adverse events. Any adverse effects associated with use of the technology, including worsening delusions and paranoia, and incidence of suicide and self-harm.
 - Resource use before, during and after treatment. This should include the time needed to implement and maintain the technologies and use them between appointments, for example to monitor and respond to alerts. It should also include the average number of treatment sessions per person, and the level of support provided (defined by healthcare professional grade and time) and any resource use associated with relapse

(such as hospital care).

- Information should be collected on the standard care people have in the comparison groups, for example, the number of CBTp sessions people have as standard care in the comparator group and the number of CBTp sessions people have in addition to using the technologies in the intervention group.
- Access to treatment, including average waiting time from referral to treatment for psychosis, for people having standard care and for people using the technologies.
- Patient and staff experience of using the technology.
- Use of the technology including:
 - number of people accessing services with the relevant clinical indication
 - number of people offered the technology
 - number and proportion of people who started using the technology
 - engagement over time including frequency of use (continued or repeat use)
 - rates of stopping treatment
 - reasons why people stop using the technologies (for example, because of improvement in symptoms, lack of improvement or other reasons).
- Information about any updates to the technologies during the observation period.

3.5 Evidence generation period

The evidence generation period should be 3 years, or less if enough evidence is available. This will be enough time to implement the study, collect and analyse the data and write a report.

4 Monitoring

The companies must contact NICE:

- within 6 months of publication of this plan to confirm agreements are in place to generate the evidence
- annually to confirm that the data is being collected and analysed as planned.

The companies should tell NICE as soon as possible of anything that may affect ongoing evidence generation, including:

- any substantial risk that the evidence will not be collected as planned
- new safety concerns
- the technology significantly changing in a way that affects the evidence generation process.

If data collection is expected to end later than planned, the companies should contact NICE to arrange an extension to the evidence generation period. NICE reserves the right to withdraw the guidance if data collection is delayed, or if it is unlikely to resolve the evidence gaps.

5 Implementation considerations

The following considerations around implementing the evidence generation process have been identified through working with system partners:

- The companies should provide training for staff to support use of the technologies.
- Practitioners and therapists need time for training and supervision, and to get a thorough understanding of the digital content. Supervision would include monitoring and responding to alerts, and escalating care if needed.
- The technologies may not be suitable for everyone. For example, people without access to, or who cannot use, a smartphone or computer, or if paranoia or delusions are triggered or worsened by using digital technology. Also, digital technologies may be difficult to use if a person's psychosis symptoms worsen.
- Evidence generation should be overseen by a steering group including researchers, commissioners, practitioners, and people with lived experience.
- The evidence generation process is most likely to succeed with dedicated research staff to reduce the burden on NHS staff, and by using suitable real-world data to collect information when possible.
- There is wide variation in standard care for people with psychosis in the NHS. Contributing sites and services should be chosen to maximise the comparability and generalisability of evidence generated, both in terms of the populations covered and the standard care delivered.
- Careful planning of the approach to information governance is vital. Implementers should ensure that appropriate structures and policies are in place to ensure that the data is handled in a confidential and secure manner and to appropriate ethical and quality standards.

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