NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

HealthTech draft guidance

Digital technologies to support self-management of asthma: early-use assessment

Guidance development process

NICE early-use HealthTech guidance provides recommendations on promising health technologies that have the potential to address national unmet need. NICE has assessed early evidence on these technologies to determine if earlier patient and system access in the NHS is appropriate while further evidence is generated.

Early-use HealthTech guidance recommendations are conditional while more evidence is generated to address uncertainty in their evidence base. NICE has included advice in this guidance on how to minimise any clinical or system risk of early access to treatment.

Further evidence will be generated over the next 3 years to assess if the benefits of these technologies are realised in practice. NICE guidance will be reviewed to include this evidence and make a recommendation on the routine adoption of this technology across the NHS.

Find out more in the section on early-use HealthTech guidance assessments in NICE's HealthTech programme manual.

NICE is producing this guidance on digital technologies to support self-management of asthma in the NHS in England. The medical technologies advisory committee has considered the evidence and the views of clinical and patient experts.

This document has been prepared for consultation with the stakeholders. It summarises the evidence and views that have been considered, and sets out the recommendations made by the committee. NICE invites comments from the stakeholders for this evaluation and the public. This document should be read along with the evidence.

The committee is interested in receiving comments on the following:

- Has all of the relevant evidence been taken into account?
- Are the summaries of clinical and cost effectiveness reasonable interpretations of the evidence?
- Are the recommendations sound and a suitable basis for guidance to the NHS?
- Are there any aspects of the recommendations that need particular consideration to ensure we avoid unlawful discrimination against any group of people on the grounds of age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex or sexual orientation?

After consultation:

- Based on the consultation comments received, the committee may meet again.
- If committee meets again it will consider the evidence, this evaluation consultation document and comments from stakeholders.
- The committee will then prepare the final draft guidance, which will go through a resolution process before the final guidance is agreed.

Note that this document is not NICE's final guidance on digital technologies to support self-management of asthma. The recommendations in section 1 may change after consultation.

More details are available in NICE's HealthTech programme manual.

Key dates

Closing date for comments: 21 January 2026

Second committee meeting: 19 February 2026

1 Recommendations

Can be used during the evidence generation period

1.1 Eight digital technologies can be used in the NHS during the evidence generation period as options to support self-management of asthma. The technologies are:

- Asthmahub
- Asthmahub for parents
- AsthmaTuner
- Digital Health Passport
- Luscii
- myAsthma
- RDMP (Respiratory Disease Management Platform)
- Smart Asthma.

These technologies can only be used:

- if the evidence outlined in the evidence generation plan for technologies to support self-management of asthma is being generated
- as long as they have appropriate regulatory approval including NHS England's Digital Technology Assessment Criteria (DTAC) approval.

1.2 The companies must confirm that agreements are in place to generate the evidence. NICE will contact the companies annually to confirm that evidence is being generated and analysed as planned. NICE may revise or withdraw the guidance if these conditions are not met.

1.3 At the end of the evidence generation period (3 years), the companies should submit the evidence to NICE in a format that can be used for decision making. NICE will review the evidence and assess if the technology can be routinely adopted in the NHS.

What this means in practice

These digital technologies can be used as options in the NHS during the evidence generation period (3 years) and paid for using core NHS funding. During this time, more evidence will be collected to address any uncertainties. Companies are responsible for organising funding for evidence generation activities.

After this, NICE will review this guidance and the recommendations may change. Take this into account when negotiating the length of contracts and licence costs.

Potential benefits of use in the NHS during the evidence generation period

- **Patient benefit:** The technologies support people to follow their personalised asthma action plan (PAAP) and could help them use their medication and inhalers more effectively. The technologies can increase confidence in self-managing asthma and may improve communication with healthcare professionals, leading to improved asthma management.
- **Clinical benefit:** Clinical evidence suggests that digital technologies for self-management of asthma may improve asthma control, which could help reduce exacerbations and improve quality of life.
- **System and resource benefit:** The technologies may improve asthma control, which could reduce hospitalisations and emergency department visits.
- **Equality of access:** Digital technologies offer an alternative format to written PAAPs. Some people may find it easier to use digital technologies.

Managing the risk of use in the NHS during the evidence generation period

- **Costs:** Early results from the economic modelling show that the technologies could be cost effective. But there is wide variation in the prices of the technologies.
- **Patient outcomes:** The digital technologies are not intended to replace clinical review. So the risk from using them is low because people will still have regular reviews with healthcare professionals.
- **Equality:** Some people may find it more difficult to use digital technologies and may need additional support. This includes people who:
  - are less comfortable using digital technologies
  - have limited access to hardware or the internet
  - are neurodivergent
  - have learning disabilities
  - have problems with manual dexterity
  - have visual or cognitive impairments
  - have difficulty reading, writing or understanding health-related information (including people who cannot read English).

What evidence generation is needed

More evidence needs to be generated on:

- clinical effectiveness, including:
  - the long-term impact on outcomes such as exacerbations, asthma control and quality of life
  - how effective the technologies are at improving self-management of asthma
  - how effective the technologies are in the following subgroups: children under 5 (supported by parents and carers), people with severe asthma and people with newly diagnosed asthma
- rates of people both starting and stopping use of the technologies, and reasons for stopping use
- the experience of people using the technologies, including ease of use and how comfortable people feel using them

- resource use, including staff time
- the additional value of connected devices, such as spirometers, peak flow meters and smart inhalers.

The evidence generation plan gives further information on the prioritised evidence gaps and outcomes, ongoing studies and potential real-world data sources. It includes how the evidence gaps could be resolved through real-world evidence studies.

Why the committee made these recommendations

There is a high unmet need for effective self-management support for asthma control. Improving asthma control can reduce exacerbations and enhance quality of life.

Evidence on the clinical effectiveness of digital technologies to support self-management of asthma is limited, but studies suggest that they may help to improve asthma control in the short term. There are no reports of harm or adverse events from the technologies. The risk to people from using the technologies is considered low because they do not replace clinical review by a healthcare professional. People who have used the technologies report that they are easy to use and acceptable in terms of comfort and willingness to use.

The long-term clinical effectiveness is uncertain. The studies are mostly observational and some have small sample sizes. So, more evidence is needed on the long-term impact of the technologies on important outcomes such as asthma control, exacerbations and quality of life.

Early results from economic modelling suggest that the technologies could be cost effective. But more evidence is needed on the impact of the technologies on clinical outcomes and the numbers of people who start and continue to use them.

2 Information about the technologies

2.1 Digital technologies aim to support self-management of asthma by providing a digital personalised asthma action plan (PAAP), tailored education and tools for tracking symptoms and medication. These features may improve medication adherence and asthma control, reduce exacerbations and improve quality of life.

2.2 Technologies included in the scope vary in terms of:

- target population
- mode of delivery (apps, online platforms and additional hardware requirements)
- features and components.

The final scope specified that the technologies should function independently of clinical oversight from healthcare professionals such as through remote monitoring. It also specified that, as a minimum, the technologies should include:

- access to a PAAP
- evidence-based education on self-management
- tracking and monitoring of symptoms or lung function.

The technologies identified also had the additional following features:

- inhaler technique support
- trigger alerts
- environment alerts
- reminders for medication or appointments
- medication tracking (except Luscii).

Digital technologies are offered after diagnosis or treatment initiation or during routine reviews. They could be offered in:

- primary care, such as GP surgeries
- secondary care, such as hospitals or specialist clinics
- tertiary centres
- the community, such as pharmacies or schools.

They could also be used by carers, parents and community workers to support children or adults who cannot self-manage their condition.

2.3 Details of the 8 technologies included in this assessment are in table 1. Further detail on mode of delivery and features (including symptoms and peak flow monitoring and PAAPs are storage and management) is in table 2 of the external assessment group (EAG) report. Costs were estimated by the EAG using information provided by companies (see appendix C2 of the EAG's report). Seven technologies are currently in use within the NHS and 1 (AsthmaTuner) reported a planned release in 2026.

Table 1 Technologies included in the assessment

Technology (company)	CE or UKCA mark	Target users	Upfront cost including hardware, £	Estimated technology cost per patient per year, £
Asthmahub (ICST)	I	People 18 years and over	29	0
Asthmahub for parents (ICST)	I	Children and parents or carers	29	0
AsthmaTuner (MediTuner)	IIb	People 6 years and over and healthcare professionals	Public price not disclosed (commercial in confidence)	Public price not disclosed*
Digital Health Passport (Tiny Medical Apps)	I	People 5 years and over and parents or carers	77	0
Luscii (Luscii Healthtech BV)	IIa	All age groups and healthcare professionals	8.50	180
myAsthma (My MHealth Limited)	I	People 13 years and over	35	30
RDMP (Aptar Digital Health)	I	People 16 years and over and healthcare professionals	112	180
Smart Asthma (Smart Respiratory Products Ltd)	IIa	People 5 years and over and parents or carers	66.65	0

Abbreviations: CE, Conformité Européene; ICST, Institute of Clinical Science and Technology; RDMP, Respiratory Disease Management Platform; UKCA, UK Conformity Assessed.

Sustainability

2.4 For information, Carbon Reduction Plans for UK carbon emissions, or a commitment to reducing greenhouse gas emissions and achieving net zero, for 3 technologies are published here:

- Aptar Digital Health: Climate Transition Plan 2024
- My MHealth Limited: Delivering a Net Zero NHS
- Smart Respiratory Products Ltd: Carbon Reduction Plan.

The following companies did not disclose a Carbon Reduction Plan for UK carbon emissions or a net zero commitment:

- ICST
- Luscii Healthtech BV
- MediTuner
- Tiny Medical Apps.

3 Committee discussion

The medical technologies advisory committee considered evidence on digital technologies to support self-management of asthma from several sources. This included evidence submitted by the companies, a review of clinical and cost evidence by the external assessment group (EAG), and responses from stakeholders. Full details are available in the project documents for this guidance.

The condition

3.0 Asthma is a long-term respiratory condition that can affect children, young people and adults. It happens when the airways swell and narrow because of allergies or other stimuli, making it hard to breathe. This can cause symptoms such as recurring episodes of wheezing, shortness of breath, chest tightness and coughing. The symptoms may get worse over time and can limit a person's ability to undertake daily activities. There may also be flare-ups or exacerbations, which can result in hospitalisation.

Current practice

3.1 Recommendations for self-management of asthma are in section 1.14 of the BTS, NICE and SIGN guideline on asthma. These include offering a personalised asthma action plan (PAAP) to adults, young people and children aged 5 and over with a diagnosis of asthma (and their families or carers, if appropriate). A PAAP should include:

- information on minimising exposure to asthma triggers
- guidance on increasing inhaled corticosteroid dose if asthma control worsens and guidance on what to do if symptoms do not improve
- advice on when to contact a healthcare professional if asthma control deteriorates.

3.2 Clinical experts reported that in current practice PAAPs are not always provided. They added that, even when they are provided, some people can misplace or forget their PAAP. Some people may also find it difficult to remember the steps in their PAAP or may apply them incorrectly because they do not fully understand their PAAP.

Unmet need

3.3 Uncontrolled asthma is common and can lead to emergency department visits, hospital admissions and avoidable deaths. Clinical experts said that many people do not have structured self-management support. They added that people can have poor engagement with written action plans, incorrect inhaler technique and non-adherence with medications. People do not always get tailored advice, especially young people, people who are underserved and people who are newly diagnosed. Asthma service provision varies, and inequalities are barriers to access and quality of care. Clinical experts reported that self-management is key in managing asthma, and there is a significant unmet need for effective self-management support.

Patient considerations

3.4 A patient expert explained how reminders from a digital technology had helped them remember to take their medication. They said that using the technology had reduced their anxiety about managing their asthma. They said that it also helped improve efficiency and

focus at GP appointments because of data sharing and because their PAAP was stored digitally. But the patient expert cautioned that these tools should complement and not replace current care. They highlighted that the technologies could help overcome barriers such as poor engagement with written PAAPs and incorrect inhaler technique. They emphasised that digital technologies needed to be simple and inclusive and should consider diverse needs and incorporate safeguarding when used by younger people.

Clinical effectiveness

Evidence base

3.5 The evidence comprised:

- 5 published studies, including:
  - 1 UK observational study
  - 1 UK service evaluation
  - 3 international studies (including 1 randomised controlled trial)
- 10 unpublished studies
- 5 conference abstracts.

The committee acknowledged that the quantity and quality of studies for each technology vary. Some of the evidence from peer-reviewed studies was done outside of the UK, in Sweden, the US, Thailand and the Netherlands. Clinical experts explained that because of differences in healthcare settings and care pathways this evidence is unlikely to be generalisable to NHS clinical practice. So, the committee agreed that UK-based evidence is needed.

3.6 Qualitative data exploring patient perspectives, usability and acceptability was available for 4 technologies. There is limited evidence on user experience from the UK.

Impact on asthma and patient outcomes

3.7 The committee noted that evidence focused on clinical outcomes (asthma control and exacerbations) and patient-reported outcomes (quality of life and acceptability) and included some data on medication use and adherence. The committee noted that evidence from some of the studies suggests that digital technologies:

- improve asthma-control and quality-of-life scores
- reduce hospitalisations or emergency department visits
- reduce rescue medication use or increase controller medication use.

The committee agreed that early evidence suggests that digital technologies can support self-management of asthma.

3.8 When reported, ease of use and acceptability was generally high. The committee noted that qualitative evidence suggests digital technologies may improve symptom awareness and understanding of asthma.

Clinical evidence gaps

3.9 The committee noted several evidence gaps that should be addressed in future research. It said that demographics (such as age, sex, ethnicity and socioeconomic status) and clinical details (such as asthma control and comorbidities) were poorly reported. It also said that disease severity was inconsistently defined across studies. Evidence was mainly related to uncontrolled asthma populations, which it said limited generalisability to the wider asthma population. Other limitations included a reliance on self-reported outcomes, variation in measurement tools, small sample sizes and short follow-up periods (less than 12 months). Evidence was lacking for some subgroups including children under 5 (supported by parents and carers), people with severe asthma and people who are newly diagnosed. The committee agreed that

further evidence is needed to address these gaps and strengthen confidence in the clinical effectiveness of digital technologies to support self-management of asthma.

3.10 The committee highlighted the need to generate evidence using validated tools (such as asthma control test, asthma quality of life questionnaire, asthma control questionnaire, lung function tests) to assess the impact of the technologies on key asthma outcomes, particularly in the longer term. It also highlighted the need for robust peer-reviewed studies with adequate sample sizes and to include diverse populations, including children, adolescents and people with severe or newly diagnosed asthma. It agreed that further qualitative evidence on whether the technologies can help improve people's knowledge, support self-management and promote appropriate use of their PAAPs and treatment regimens would also be useful.

Value of connected devices

3.11 The committee noted that some of the apps can be connected to spirometers, peak flow meters or smart inhalers, enabling people to track and monitor lung function, medication use and inhaler technique. Clinical experts explained that there is currently no evidence that tracking lung function is linked to improved outcomes, and questioned the additional value of having connected devices. They also noted that there is no evidence to suggest whether spirometry or peak flow would be more useful as an add on. They added that there may be resource implications for training people to use these devices properly and questioned how reliable the outputs would be, particularly for spirometry. Company representatives confirmed that the apps can also be used independently without connected devices. The committee concluded that further evidence is needed to determine whether the addition of a connected device affects outcomes such as asthma control or exacerbations.

Safety

3.12 The committee noted that there were no adverse events reported and discussed the safety of using the technologies in the NHS during the evidence generation period. It noted the nature of the technologies, which are intended for self-management and should not replace clinical review. Clinical experts added that for most people self-management is currently based on a written PAAP. They said that additional features, such as education, symptom tracking and a digital plan, are unlikely to represent a clinical risk. The committee noted that data security and privacy risks should be mitigated through standard compliance measures and regulations. Clinical experts highlighted that feedback from the patient survey noted an overfocus on data and questioned whether tracking symptoms or lung function could lead to anxiety for some people. The committee agreed that it would be important to collect data on quality of life to see whether there were any adverse effects of increased tracking. The committee concluded that the overall clinical risk of using these digital technologies during the evidence generation period is low.

Barriers to implementation and uptake

3.13 The committee noted that a patient survey provided useful insights and was informative, but was not fully representative of the UK population. So the committee said that caution is needed when generalising feedback on usability and accessibility. It noted that, although these technologies are not yet widely used, people reported positive experiences but with varying ease of use. But concerns were noted around privacy and data sharing. Practical issues such as lack of a smartphone or internet access were identified as barriers for some people. The committee also noted the British Thoracic Society's submission, which noted risks such as short-term increased healthcare use, widening inequalities and implementation challenges. The committee agreed that more data

on healthcare resource use is needed and that barriers to use (such as device access, connectivity and digital literacy) and implementation would need to be considered. It said that further evidence exploring these barriers in diverse populations would be useful.

Cost effectiveness

Economic model

3.14 An exploratory economic model was developed to identify key cost and utility drivers and areas of uncertainty for digital technologies for self-management of asthma compared with standard self-management programmes. Because of the lack of data on clinical outcomes, the model could not be fully developed and was instead used to explore different value propositions. Improved asthma control was considered the most plausible scenario, based on the clinical evidence, despite uncertainty in the magnitude and duration. For this reason, the clinical impact of the technologies was assumed to be the same for all technologies. The EAG used a 5-year time horizon but noted that the time period for most clinical studies was less than a year. The EAG did not include any subgroup analyses in the economic model because there was not enough evidence to inform inputs. The committee concluded that the model structure was appropriate and that the results suggested that the technologies could plausibly be cost effective if they could improve asthma control. But it stated that the inputs were highly uncertain because of very limited clinical evidence and that further evidence generation is needed to address this uncertainty.

Technology costs

3.15 The committee highlighted that the cost of the technologies is currently the key driver in the model. But it acknowledged that the clinical impact was assumed to be the same for all technologies because of a lack of data (see section 3.15). So, the clinical impact

would not affect the model's results. The committee noted that costs varied widely between technologies and that technologies with connected devices had higher costs. The committee recalled that there was no clinical evidence to suggest that the addition of a connected device improves outcomes more than a standalone app (see section 3.12) The committee concluded that further evidence generation could reduce uncertainty around clinical outcomes and strengthen future evaluations, particularly for more expensive technologies.

Uptake and attrition rates

3.16 The committee noted that initial uptake and dropout (attrition) rates appear to be important drivers in the model for some technologies and there is currently no data available. The committee agreed that further evidence generation should include reporting on uptake and dropout rates and that qualitative data on user experience would be useful to understand the impact on different groups.

Equality considerations

3.17 The final scope and the equality impact assessment describe the equality considerations for this assessment. The committee noted that the patient survey highlighted some barriers in accessing the technologies, such as neurodiversity, cognitive impairments and communication difficulties. All the companies confirmed that the apps can use the accessibility and adaptability features on a smartphone. They also confirmed that multiple language options are either already available or in development. The committee highlighted the importance of gathering insights from more ethnically diverse groups and from people for whom English is not their first language. It said that this would identify barriers that might affect equality of access. The committee emphasised that future engagement should prioritise diversity and inclusion to ensure digital tools are designed and evaluated to address

potential inequalities and support equitable access for all patient groups. The committee thought that, by providing an alternative format of the PAAP and more personalised support, digital technologies could reduce inequalities in care and help engage younger people. It emphasised the importance of involving young people, as well as their parents and carers, in evidence generation.

4 Committee members and NICE project team

This topic was considered by specialist committee members appointed for this topic and NICE's medical technologies advisory committee, which is a standing advisory committee of NICE.

Committee members are asked to declare any interests in the technologies to be evaluated. If it is considered there is a conflict of interest, the member is excluded from participating further in that evaluation.

The minutes of each committee meeting, which include the names of the members who attended and their declarations of interests, are posted on the NICE website.

Chair

Teik Goh

Chair, medical technologies advisory committee

NICE project team

Each evaluation is assigned to a team consisting of 1 or more health technology analysts (who act as technical leads for the evaluation), a technical adviser, a project manager and an associate director.

Lakshmi Mandava

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