NICE National Institute for
Health and Care Excellence

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

HealthTech Programme

Digital Technologies to Support Asthma Self-management: Early Value Assessment

Final scope

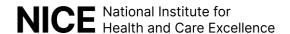**August 2025**

1   Introduction

The [NICE prioritisation board](#) agreed that digital technologies to support self-management of asthma have the potential to address system needs in asthma management based on a topic intelligence briefing. This topic is being evaluated by the NICE HealthTech Programme as an [early value assessment (EVA).](#)

2   Technologies

This section describes the properties of digital technologies to support self-management of asthma based on information provided to NICE by manufacturers and experts, and publicly available information. NICE has not carried out an independent evaluation of these descriptions.

2.1   Purpose of the technologies

Asthma is a common long-term condition in the UK, and around 5.4 million people are receiving treatment and support. Despite the availability of effective treatments and national clinical guidelines, suboptimal asthma control is common and leads to emergency department visits, hospital admissions, and avoidable deaths. The [NICE guideline on asthma: diagnosis, monitoring and chronic asthma management (NG245)](#) highlights the significance of personalised asthma action plans and patient education to improve asthma control. But despite clear guidance many patients still lack

structured self-management support. Clinical experts also highlighted that they often see poor engagement with written action plans and noted that a tool to make them more easily accessible on a digital device (such as a mobile phone) could improve this. They, alongside the health innovation network, highlighted other key problems with asthma control including improper inhaler use, non-compliance with medications, and lack of tailored advice to suit individuals during acute phases. These problems are especially prevalent among young people, disadvantaged groups, and those newly diagnosed. They also noted that service availability, and inequalities were barriers to accessing care.
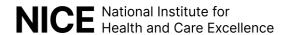
Key national policy documents, including [Fit for the future: 10 Year Health Plan for England](#), highlight the increasing use of digital technology and identifies respiratory medicine as one of the priority areas. Digital health technologies are emerging as potential tools to address unmet needs in asthma self-management, particularly where traditional approaches fall short. These technologies are designed to support individuals to take a more active and informed role in managing their condition. These tools could help personalise care by tailoring recommendations to each person's symptoms and triggers. They may promote adherence to medication and personalised asthma action plans through reminders and educational content, enable real-time symptom tracking and improve access. The use of digital technologies to support asthma self-management could help to reduce exacerbations, support symptom management and improve the quality of life for people with asthma.

2.2 Product properties

The scope includes digital technologies that support self-management of asthma. These technologies vary in terms of target population, the mode of delivery (via mobile applications or online platforms), the components and functionality offered, and the frequency and level of support provided by healthcare professionals.

Inclusion Criteria

For this EVA, NICE will consider digital technologies that are in line with the NICE asthma guideline recommendations on self-management which emphasise the importance of a personalised asthma action plan (PAAP) and

education. Clinical experts highlighted that tracking or self-monitoring of symptoms or lung function would also be a key component to assist people in following their PAAPs.

The technologies should as a minimum offer an asthma supported self-management programme which must include at least the following components:

- a PAAP,
  - based on symptoms or peak expiratory flow (PEF, or both); symptom based is preferred in children
  - including approaches to minimise exposure to indoor and outdoor air pollution and personal triggers for symptoms and exacerbations
  - including treatment regimen (inhaler use) for when asthma control deteriorates, and what to do if symptoms do not improve and advice on contacting healthcare professionals
- information and evidence-based education on self-management
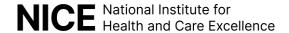- symptoms and lung function monitoring/tracking.

The technologies should generally function independently of clinical oversight from healthcare professionals. Therefore, functionality such as remote monitoring by a clinician or virtual ward use will not be assessed as part of this EVA even if the technologies include this functionality.

Technologies that can be used by adults, young people, children and families or carers will be considered.

Technologies should meet or actively be working towards regulatory compliance and available or soon to be available for use within the NHS to be considered for the assessment.

For this EVA, NICE will not consider the following types of digital technologies:

- tele-healthcare or technologies whose main purpose is management/advice provided by trained healthcare professionals

- generic education without personalisation or feedback
- computerised decision support systems for people with asthma to support self-management
- technologies that collect data with no advice for action or empowering users e.g. symptom diaries
- those that aim to completely replace in-person assessments.

Nine technologies that meet the above criteria to support self-management of asthma have been identified.
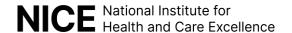
Other components that were judged to be potentially useful by experts, but not essential include:

- tracking medication
- trigger/pollution alerts
- inhaler technique information or videos
- providing means of communication or support from healthcare professionals
- functionality to print or share particular elements such as sections of the PAAP with schools or other carers
- being able to tailor or personalise elements, for example education function to the user's level of understanding.

Some of the technologies identified also include some of these features.

2.2.1 Asthmahub (The Institute of Clinical Science and Technology - ICST)

Asthmahub is a class I CE marked patient app designed to support asthma self-management for adults over the age of 18. It was developed in collaboration with NHS Wales, people with asthma and asthma specialists, and is used across NHS Wales and West Yorkshire Integrated Care Board (ICB). The key features of the app include a PAAP, education videos (about inhaler technique and breathing exercises), symptom checkers, peak flow tracking dairy and medication guidance. Users can store details of their healthcare information, receive prompts and reminders for appointments, track physiological readings, record patient reported outcome measures and

access decision support tools to guide self-care and when to seek help. Physiological readings can be entered manually using built-in tools for tracking daily symptoms, medication adherence and peak flow measurements. No external device is required. The app is available in English and Welsh.

2.2.2 Asthmahub for Parents (The Institute of Clinical Science and Technology - ICST)
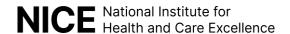
Asthmahub for Parents is another Class I CE marked app from ICST that aims to help parents or carers of children with asthma to learn about, monitor and manage their children's condition. The app has similar features to AsthmaHub, but is parent-focussed with child-specific education tailored towards parents.

2.2.3 AsthmaTuner (MediTuner)

AsthmaTuner is a Class IIb CE marked digital platform designed to support asthma self-management for individuals aged 6 years and over. All use by children and adolescents under the age of 18 must be under the supervision of their guardians. It is designed to support people with asthma to monitor lung function, symptoms and treatment at home. Users connect a MediTuner-compatible spirometer to the app, perform forced expiratory volume in 1 second [FEV_1] tests, answer symptom questions, and receive real-time feedback and personalised medication recommendations based on their current status. The platform also tracks environmental factors like pollen and weather, offers reminders for medication and lung testing, provides inhaler technique training and enables data sharing with healthcare providers. It delivers individual tailored treatment plans based on symptoms and lung function, which is aligned with professional guidance via its CarePortal – a web interface for healthcare professionals. The app is currently not available in the NHS but will be introduced in 2026. The app is multilingual, supporting English, Swedish, Danish and Norwegian.

2.2.4 Digital Health Passport (Tiny Medical Apps)

The Digital Health Passport is a class I CE marked app designed to support children and young people with asthma. The company noted that the primary
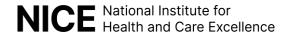
audience for the Digital Health Passport is young people aged 13–25 living with asthma and allergies, but it can also be used by parents of children aged 5 to 12, and people aged 26 and over. This app was co-produced by young people, school nurses, general practitioners (GPs), and asthma specialists in collaboration with NHS England, NHS Wales and Asthma + Lung UK. The key features of this app include a PAAP, emergency health plan, inhaler technique training, symptom tracking, medication reminders and reordering, environmental alerts, health education modules and ACT (Asthma Control Test) score tracking and a dashboard for clinicians to manage patients. The app also has NHS login integration. This app has been selected by the NHS England Innovation Technology Payments Evidence Generation Fund for use by Greater Manchester Health and Social Care Partnership and Sheffield Children's Hospital. It is currently used across several ICB regions in the NHS. The app is available only in English.

2.2.5 Luscii (Luscii healthtech B.V)

Luscii is a Class IIa CE-marked digital platform designed to support asthma self-management for people of all ages. The app includes features such as the Asthma Control Questionnaire, medication adherence tracking, home spirometry and fractional exhaled nitric oxide [FeNO] testing (with Bluetooth connected spirometer and FeNO device), and symptom monitoring. The app provides a PAAP based on Ardens Action plan, which is currently symptom based. Healthcare professionals can access all information via a web-based dashboard at all times. Data can be exported directly from the dashboard by users. Annual reminders can be sent to prompt annual asthma reviews. Deterioration in symptoms also prompts the patient for an asthma review. Trends over different time periods can be viewed in a graphical format to aid asthma reviews and track symptoms and response to treatment. It also delivers educational content via text and embedded videos. Luscii is providing the asthma self-management programme at NHS Dorset. The app is currently available in English, Dutch, German, French, and Portuguese.

2.2.6 MyAsthma (my mHealth)

MyAsthma is a class I CE marked web-based digital application that is designed to support people with asthma (including severe asthma) to manage
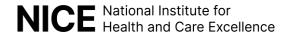
their condition. The app also allows clinicians to monitor and support care remotely. This is a UK based app and was co-developed by people with asthma, experts and the public and is now used as part of routine asthma management within some NHS trusts. The app is aimed at people 13 years and over. The key features include a PAAP, educational course (covering all the topics recommended by NG245), peak flow and symptom tracking, monitoring trends of lung function, recording physical activity and reporting adherence to medication. The platform facilitates the completion of assessments suitable for mild, moderate and severe asthma (Asthma Control Questionnaire, Severe Asthma Questionnaire, Exacerbation Questionnaire, Mini Asthma Quality of Life Questionnaire). Other features include environmental alerts, medical appointment diary, inhaler instruction videos, mind toolkit (10 short videos supporting anxiety management, mind exercises and meditation), smoking cessation advice and support, clinician messaging and a patient dashboard for clinicians to manage patients. For people with severe asthma, myAsthma Plus part of the myAsthma app supports the use of and monitoring of biologic therapy. This is being used by 11 severe asthma centres in the NHS. The app is available only in English.

2.2.7 NuvoAir Home (NuvoAir Medical)

NuvoAir Home is a Class Im CE-marked medical device and a digital platform to support asthma self-management for people aged 5 years and over. The platform links with other Bluetooth-enabled devices, such as a spirometer, inhaler sensors, cough monitor, and activity tracker. The key features of this app include tailored guidance and feedback on inhaler technique and symptom prevention, lung function monitoring, symptom and medication tracking, a PAAP, activity log, display air quality data, personal insights on lung health trends and data sharing with healthcare professionals for remote monitoring. The app is available only in English.

2.2.8 Respiratory Disease Management Platform (RDMP) (Aptar Digital Health)

Aptar Digital Health Respiratory Disease Management Platform (ADH RDMP) is a CE marked self-management platform designed to support people with asthma. The patient mobile app (Respi.me) connects to an inhaler sensor
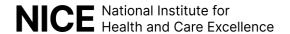
(HeroTracker® Sense) that monitors medication adherence and inhaler technique. The key features of the patient app include a PAAP, real time tracking of inhaler technique, lung function recording (FEV_1, FVC and PEF via Bluetooth connected spirometer), medication adherence and reminders, symptom and trigger tracking, physical activity tracking, and tailored education. The app connects to Respi.me Connect portal, enabling real-time data sharing with healthcare professionals for remote patient monitoring. The platform is currently being evaluated in clinical studies, including one at Guy's and St Thomas' NHS Foundation Trust, to evaluate the impact on asthma patients. The app is currently available in English, German, French, Italian and Spanish.

2.2.9 Smart Asthma (Smart Respiratory Products Ltd)

Smart asthma is a class IIa CE marked app designed to help people manage their asthma. It is intended for users aged 5 and over and their carers. It is a UK based app currently used in trials and ongoing evaluations across several NHS trusts. The key features of this app include a PAAP, peak flow tracking (via a digital smart peak flow meter), inhaler technique training, inhaler and medication use tracking (with smart inhaler assistant), daily symptoms logging, education content, AI powered alerts, personalised reminders, remote monitoring and data sharing with healthcare professionals (via email) for review. The app is available in multiple languages.

3   Target condition

Asthma is a long-term condition of the airways in the lungs that can affect children, young people, and adults. It happens when the airways become swollen and narrow due to 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 periods when people have flare-ups or exacerbations which can result in hospitalisation.
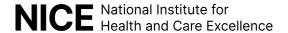
3.1 Epidemiology

Asthma is the most common lung condition in the UK, with around 8 million people (over 12% of the population) diagnosed, and 5.4 million currently receiving treatment. Asthma prevalence is thought to have plateaued since the late 1990s and has been declining over time. Wales (15.6%) and Scotland (13%) have higher asthma prevalence than England (9.7%) and Northern Ireland (7%).

There are 60,000 hospital admissions and 200,000 bed days for asthma per year in the UK. Between 2019-2022, average winter asthma hospital admissions were 130% higher than summer admissions.

Chronic lower respiratory diseases (including asthma and chronic obstructive pulmonary disease) were reported as the third most common cause of mortality in England and Wales in 2023 (Office for National Statistics, 2025). The UK still has some of the highest rates worldwide and on average 4 people a day die from asthma and someone has a potentially life-threatening asthma attack every 10 seconds. Two thirds of these deaths are preventable with better care and management.

Healthcare and societal burden and costs of asthma

Asthma poses a significant financial burden on the UK NHS. Analysis by Asthma + Lung UK estimates the direct costs to the NHS in 2023 at £1.3 billion. The majority of these costs were related to primary care services (74%), mainly 60% for prescriptions and 14% for consultations followed by 13% for disability claims and 12% for hospital care. Average management costs to the NHS of a person with uncontrolled asthma are 62% or £378 higher than someone with controlled asthma per year. In addition, the indirect costs were estimated to be £4.5 billion, mostly due to lost productivity (70%) and £833 million from reduced working hours due to sick days taken or to attend a healthcare appointment.

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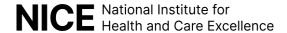
4   Current management and care pathway

4.1 Treatment and management of asthma

The [NICE guideline on asthma: diagnosis, monitoring and chronic asthma management (NG245)](#) and [asthma pathway (NG244)](#) provides recommendations on diagnosing, monitoring and managing asthma in adults, young people. They recommend a stepwise approach to treatment based on symptom control and severity. They emphasise diagnosis using objective tests, regular monitoring reviews, a personalised asthma action plan (PAAP), and patient education to support long-term self-management. The aims of treatment are to help people control their asthma symptoms, reduce the frequency and severity of asthma attacks, prevent sudden exacerbations, and improve longer term health outcomes and quality of life.

4.2 Care pathway

In the UK, self-management is central to the asthma care pathway. The national guidelines including [NG245](#) and [NG244](#) recommend that people over age of 5 diagnosed with asthma are offered a self-management programme which includes:

- A documented PAAP based on symptoms or peak expiratory flow (or both) for adults, with symptom-based plans preferred for children. It should include:
  - Information on asthma triggers, including indoor and outdoor air pollution and smoking.
  - Guidance on how to minimise exposure to these triggers.
  - Guidance for adults using inhaled corticosteroids on increasing the dose for 7 days when asthma control worsens and clear instructions on how and when to do this and what to do if symptoms do not improve.
- Review and reinforcement
  - The PAAP is reviewed during hospital admissions, virtual ward admissions, acute consultations in primary care or emergency departments, and annual reviews by trained healthcare professionals.
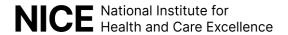
- o Ensure the person understands how to use the action plan.
- Self-monitoring and support
  - o Advice on when to contact a healthcare professional if asthma control deteriorates.
  - o Use of appointment reminders, structured asthma review protocols, and IT-based tools to support ongoing care.
  - o Telephone calls to provide support and advice.
- Community and school involvement
  - o In-school asthma education programmes delivered by trained personnel.
  - o Support from pharmacists, community workers, and healthcare teams, especially in deprived or ethnic minority communities.
- People-centred approach
  - o Education aligned with NICE guidelines on individual's experience
  - o Empowers individuals and families to take an active role in managing asthma and making informed decisions about care.

The guidelines also recommend considering a self-management programme including an action plan and education for the families or carers of children under 5 with suspected or confirmed asthma.

4.3 Position of digital technologies to support asthma self-management in the care pathway

Digital technologies could be offered as an adjunct to standard asthma care, enhancing key components of self-management. Digital technologies can enhance PAAPs by providing interactive digital versions, tailored digital content and real-time symptom and medication use tracking. These tools could be offered after diagnosis, treatment initiation, and during routine reviews. They could be offered in different settings such as GP surgeries (primary care setting), hospitals or specialist clinics (secondary care setting), tertiary centres and in the community via pharmacies or schools. They could also be used by carers, parents and community workers to support children or individuals who are unable to manage their condition independently.
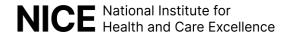
The use of digital technologies would not replace regular review by healthcare professionals.

5   Comparator

The comparator for this assessment is standard asthma self-management programmes compromising a written PAAP and education based on a patient's underlying asthma severity and treatment, without the use of digital tools.

6   Decision problem

Decision question	Does the use of digital technologies to support self-management of asthma have the potential to be clinically and cost-effective in the NHS?
Population	People with a confirmed diagnosis of asthma, their families, or carers
Subgroups	Depending on the availability of evidence, the following subgroups may be considered: • adults (aged 17 and over) including families or carers • young people/adolescents and children aged 5 to 16 including families or carers • families or carers of children under 5 • people newly diagnosed • severe asthma • uncontrolled asthma/at risk of poor outcomes.
Intervention	Digital technologies to support self-management: • Asthmahub • Asthmahub for Parents • AsthmaTuner • Digital Health Passport • Luscii • MyAsthma • NuvoAir Home • Respiratory Disease Management Platform • Smart Asthma
Comparator(s)	Standard asthma self-management programmes without digital support
Healthcare setting	Community, primary or secondary care, tertiary centres
Outcomes	The outcome measures to consider include:

Intermediate outcomes

- Inhaler technique (using checklists or standardised scoring tools like 'inhaler technique assessment tool')
- Medication use (including use of rescue/reliever medication and type of inhaler)
- Adherence/attrition rates
- Number of referrals to specialists

Clinical outcomes

- Changes in symptoms/symptomatic improvement
- Lung function (such as change in FEV_1 and FCV values, PEF or FeNO)
- Asthma control (measured using validated tools such as childhood asthma control test [C-ACT], asthma control test [ACT], asthma control questionnaire [ACQ] or St George's respiratory questionnaire [SGRQ])
- Symptom free days
- Exacerbations or attacks
- Mortality
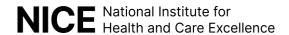- Adverse events (such as respiratory infection)

Patient-reported outcomes

- Time off work (adults/parents/carers)/school (children/young people)-number of work/school days missed
- Quality of life
- Ease of use and acceptability
- Patient perception of technology

Costs and resource use

Costs will be considered from an NHS perspective and Personal Social Services perspective. Costs for consideration may include:

- Cost of the technologies including software, device, license fees, staff training, patient education, implementation, and ongoing operational costs
- Costs and healthcare resource use associated with managing asthma and exacerbations such as:
    - unscheduled hospital presentations such as emergency department visits or urgent consultations, adverse events, or complications
- healthcare appointments/visits in all settings (community, primary, or secondary care) including tertiary asthma services
    - length of hospital stay
    - number of treatments and extent of treatments
- staff time (including remote care).

Time horizon	The time horizon for estimating the clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared.
Evidence gap analysis	Evidence gaps in clinical evidence and cost modelling should be identified to help direct further evidence generation.

6.1   Patient issues and considerations

The use of digital technologies could be helpful for people who have limited access to in-person care due to time restrictions, mobility or health issues, or geographical barriers such as living in rural areas. Some people may prefer the convenience of remote care from their home. Digital tools could enhance accessibility by offering flexible support and education for asthma management.
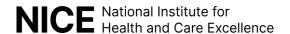
However, not everyone may feel confident using digital technologies. Users would prefer technologies that are easy to use, and are as inclusive and accessible as possible to all audiences. For example, by being available in different languages, digitally accessible and customisable to individual needs. Patient experts noted that digital technologies will not be accessible to everyone so should present an additional option rather than replace standard of care.

With an increasing move towards digital apps for self-management, patient experts emphasised the value of apps that also address co-existing conditions particularly for those with complex asthma.

Some people may worry about privacy, data security and consent. Others may be concerned about internet access, mobile data costs, or reduced contact with healthcare professionals. Digital tools should complement, not replace, face-to-face care, and it is important that the information they provide is accurate and up to date.

6.2   Implementation issues

System and infrastructure

Purchasing and subscribing to digital tools and ongoing technical support and updates would be needed. Interoperability and data sharing between devices and patient management systems is important but this might be limited due to different management systems used in primary and secondary care. For technologies that include a clinician-facing component, initial set up may require investment in IT infrastructure (devices, servers, secure networks, and internet connectivity) and integration with existing NHS systems.

Staff training

Staff would need training on using and supporting people to use digital tools. This may include attending training courses or watching training videos.

Costs

There would be ongoing operational costs such as maintenance, data storage, cyber security, and system and software updates.
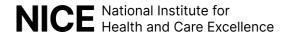
Companies may offer different pricing models (per user, per licence). They may include additional fees for updates, support, and training.

Smaller service areas including rural areas may have higher costs per user due to not needing as many licences for the technology.

6.3   Equality issues and considerations

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination, and fostering good relations between people with particular protected characteristics and others. Age, sex, disability, race, ethnicity and religion or belief are protected characteristics under the Equality Act 2010.

Gender and age: Male sex is a risk factor for asthma in pre-pubertal children or childhood. Female sex is a risk factor for the persistence of asthma in the transition from childhood to adulthood and women may experience more severe symptoms and higher rates of hospitalisations. The prevalence of asthma increases as age increases because of hormonal differences, comorbidities, and environmental triggers. Asthma management strategies are tailored for different age groups. The digital technologies also differ by the populations they are intended for. Some tools are designed specifically for
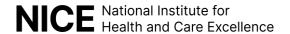
children, adolescents, or adults based on usability, safety, and regulatory considerations.

Geographical health disparity and socioeconomic status: People from deprived areas are three times more likely to have asthma, and have significantly worse outcomes and are more likely to be hospitalised than people from affluent areas. Also, they may have greater exposure to environmental triggers such as poor air quality, poor housing, and higher rates of smoking. People in these areas may face challenges with health literacy, which could make it more difficult for them to effectively self-manage their asthma.

Digital access: Digital technologies may improve asthma care by offering an alternative support format to in person appointments for those with mobility issues, poor transport access and geographical barriers. Regular access to a device with internet access is needed to use the technologies, but some people may not have access to appropriate equipment or internet. Some people may also prefer to use non-digital methods because of low health literacy or they may be less comfortable or skilled at using digital technologies. Additional support and resources may therefore be needed for people who are unfamiliar with digital technologies or people who do not have access to smart devices or the internet. The NHS England [RightCare asthma toolkit](#) highlights that self-management support should be equitable and accessible to people with varying levels of health literacy.

Ethnicity: In the UK, people of South Asian origin experience excess morbidity and three times higher hospitalisation rates compared with the White British population. South Asian children are more likely to have uncontrolled symptoms and hospital admissions with acute asthma compared with White British children.

People's ethnic, religious, and cultural background may affect their views of digital technologies for supported self-management. The NHS [RightCare asthma toolkit](#) highlights that self-management support should be culturally appropriate and available in different languages. Including accessible

language and culturally relevant content helps reduce health inequalities and promotes access for all.

Sexual orientation and gender reassignment: LGBTQ+ individuals may experience higher rates of asthma diagnosis and poorer health outcomes compared to heterosexual people. Lung function tests (like peak flow and FEV_1) may use sex-based reference values that risk misrepresenting results for transgender individuals.

Disability: Some individuals with more severe asthma, especially those with comorbidities may be covered by the Equality Act 2010 if their condition has had a substantial adverse impact on normal day to day activities for over 12 months or is likely to do so.

People with a visual, hearing, or cognitive impairment, problems with manual dexterity, a learning disability, mental health difficulties, those with language and communication difficulties (including people who cannot read English or understand health related information) or people with neurodivergent conditions may need additional support to use digital programmes for self-management.
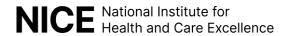
6.4   Other issues for consideration

Asthma seasonal variation

Seasonal variation significantly affects asthma self-management, as symptoms often worsen during certain times of the year due to triggers like pollen, cold weather, viral infections, and air pollution. These fluctuations can make it harder for people to maintain consistent control and anticipate exacerbations. Digital technologies may be able to support better self-management by tracking symptoms over time, providing personalised alerts based on seasonal risks, and offering tailored guidance to adjust treatment plans accordingly. This may help people stay proactive and better manage their asthma throughout the year.

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