Treatable traits in adults with asthma

A personalised medicine strategy

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The concept of treatable traits is well established in respiratory medicine, but its application in primary care remains limited. General practitioners routinely assess patients holistically and manage multimorbidity, yet when asthma control remains suboptimal, the focus is often on intensifying pharmacotherapy rather than identifying and addressing the underlying traits contributing to poor disease control.

Treatable traits are a personalised medicine strategy for chronic airway diseases. Central to this concept is the understanding that not all people with airway diseases are the same. Clinical, biological and functional presentations vary between individuals, a phenomenon often referred to as heterogeneity.[1]

KEY POINTS

- Treatable traits are a personalised medicine approach that targets clinically important and modifiable factors contributing to chronic airway disease.
- The treatable traits framework helps address the heterogeneity and complexity of asthma by focusing on individual patient characteristics rather than disease labels alone.
- Focusing on key 'super traits', such as type 2 airway inflammation, airflow limitation and poor medication adherence, can improve asthma outcomes.
- Primary care clinicians are well placed to identify and manage treatable traits through holistic assessment and ongoing patient care.
- Evidence-based online toolkits and resources are available to support implementation of a treatable traits approach in clinical practice.

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This article highlights how primary care clinicians can identify treatable traits in adults with asthma, with a focus on 'super traits', which can be more readily implemented in time-limited consultations. Recently updated international guidelines, including those from the National Institute for Health and Care Excellence, the British Thoracic Society and the Scottish Intercollegiate Guidelines Network, complement the use of a treatable traits approach. In addition, referral information for patients who continue to experience symptoms despite optimised treatment is provided, along with a range of resources and support tools that can assist primary care clinicians in managing people with asthma.

What are treatable traits?

Treatable traits are individual patient characteristics identified through multidimensional assessment. These may include comorbidities (such as anxiety, vocal cord dysfunction and reflux), risk factors (such as smoking and low bone mineral density) and self-management skills (such as adherence and correct inhaler technique).[1] To be considered a treatable trait, a characteristic must be clinically relevant, identifiable and measurable using validated trait identification markers, and amenable to treatment (Figure 1).[2]

The treatable traits approach has been shown to improve health-related quality of life, reduce breathlessness, and alleviate symptoms of anxiety and depression.[3] Meta-analyses have also demonstrated fewer hospital admissions and a lower risk of death among people receiving these interventions.[2,4]

Figure 1. Key components of treatable trait identification.
Infographic reproduced with permission from Centre of Excellence in Treatable Traits.

How can treatable traits be used in primary care to enhance asthma management?

Primary care clinicians are well versed in providing holistic patient care and performing comprehensive clinical assessments and therefore the implementation of a treatable traits framework is well aligned with this setting.[5] Nevertheless, the constraints of time-limited consultations can limit what can be addressed during a patient visit.[2,6]

Managing multimorbidity is part of everyday general practice and helps address the inherent heterogeneity and complexity of asthma.[2] However, assessing

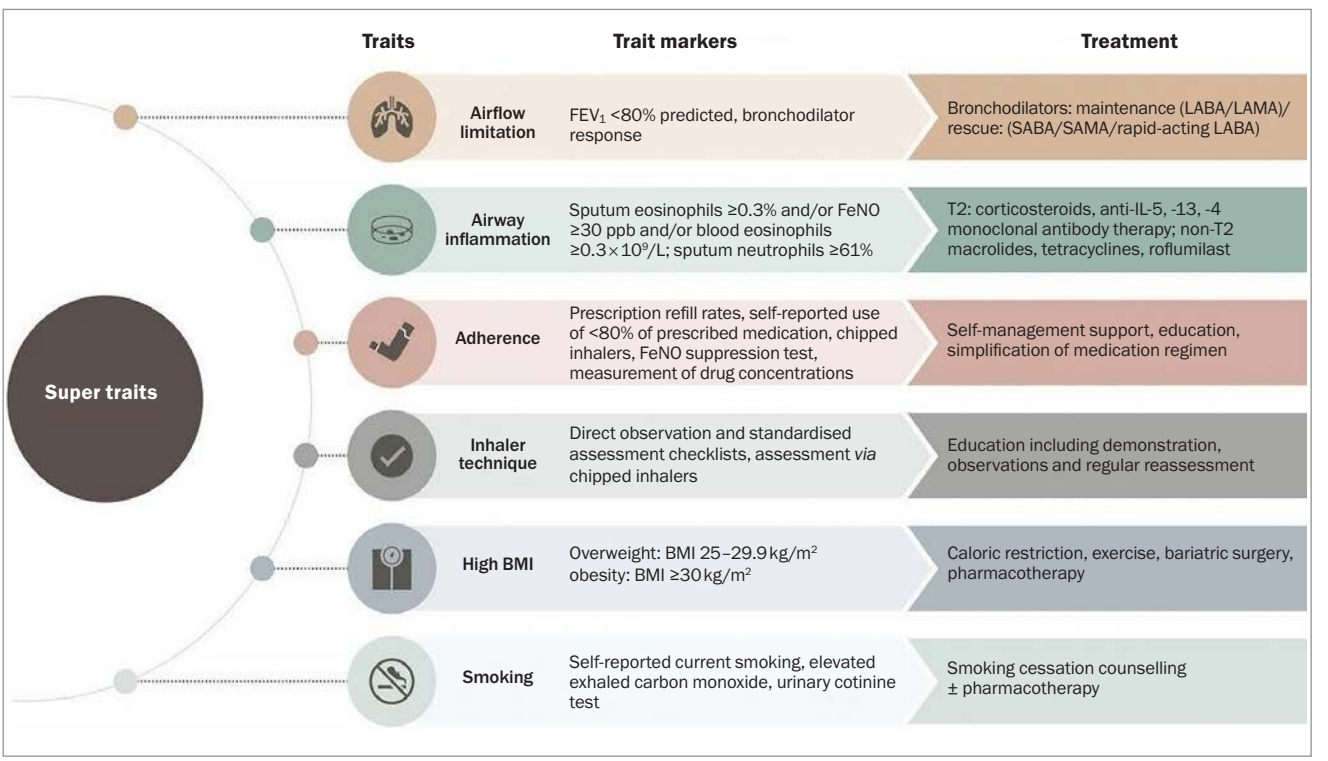

Figure 2. Asthma super traits: their trait markers and their targeted treatment.
Abbreviations: anti-IL = anticytokine directed against interleukin; BMI = body mass index; FeNO = fractional exhaled nitric oxide; FEV_1 = forced expiratory volume in 1 second; LABA = long-acting beta-2 agonist; LAMA = long-acting muscarinic antagonist; ppb = parts per billion; SABA = short-acting beta-agonist; SAMA = short-acting muscarinic antagonist; T2 = type 2 inflammation.
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TABLE. CHARACTERISTICS OF TYPE 2-HIGH AND TYPE 2-LOW ASTHMA

Feature	Type 2-high asthma	Type 2-low asthma
Definition	Most common asthma phenotype, affecting about 50–70% of patients; characterised by eosinophilic airway inflammation	Less common phenotype characterised by non-eosinophilic airway inflammation
Predominant immune cells	T-helper 2 CD4+ lymphocytes; group 2 innate lymphoid cells; eosinophils	T-helper 1 and T-helper 17 CD4+ lymphocytes; neutrophils
Key inflammatory mediators	IL-4; IL-5; IL-13; immunoglobulin E (in atopic asthma)	Interferon-gamma; IL-17

Abbreviations: CD4+ = cluster of differentiation 4-positive; IL = interleukin.

and treating the full spectrum of treatable traits is simply not feasible in routine practice. Focusing on key 'super traits', such as type 2 airway inflammation, airflow limitation and suboptimal medication adherence, can have a broad treatment effect (Figure 2). Once identified and addressed, these traits often lead to improvement in other traits.[2,7,8]

Airway inflammation, particularly type 2 inflammation, is an important super trait in asthma (Table).[9,10] Type 2 inflammation can increase asthma exacerbations and reduce lung function. Asthma biomarkers associated with type 2 inflammation include:

- eosinophils (white blood cells involved in airway inflammation)
- immunoglobulin E
- fractional exhaled nitric oxide (FeNO).

A high blood eosinophil count and elevated FeNO levels are associated with an increased risk of exacerbations, poorer asthma control and greater responsiveness to inhaled corticosteroids (ICS).[10-12] Patients who do not exhibit these markers are considered to have type 2-low asthma.

1. RED FLAGS PROMPTING SPECIALIST REFERRAL IN PEOPLE WITH CONFIRMED ASTHMA DESPITE OPTIMAL TREATMENT

- More than one 5- to 7-day course of prednisolone in any 12-month period
- Recent hospital admission for an asthma exacerbation
- Persistent uncontrolled symptoms, despite optimised treatment

This aligns with recent international guidelines, which recommend measurement of FeNO levels (where available) and blood eosinophil count (widely available in practice) to assist with accurate asthma diagnosis and to inform referral to a respiratory specialist.[10,13] These updated guidelines also target these traits therapeutically. In people aged over 12 years, guidelines now recommend the use of a combined ICS and long-acting beta-2 agonist inhaler as single maintenance and reliever therapy (SMART). Anti-inflammatory reliever therapy using ICS/formoterol now replaces short-acting beta-2 agonist monotherapy in people with infrequent asthma symptoms because short-acting beta-2 agonists are commonly overused in the community and are associated with an increased risk of exacerbations.[9,14]

What to do when your patient's asthma remains uncontrolled

Failure to address super traits, particularly in patients with severe disease, can create a 'chaotic trait cascade' of symptoms. People with untreated super traits experience more asthma attacks, which can lead to a range of downstream effects, including increased oral corticosteroid (OCS) use, airway remodelling, anxiety, breathlessness and adverse impacts on daily life.[2,15]

This vicious cycle can be avoided by adopting a treatable traits approach, even in mild-to-moderate asthma managed in primary care, where a large proportion of cases are treated.[6] However, some patients continue to experience persistent symptoms despite a confirmed diagnosis and optimised treatment. The red flags listed in Box 1 should prompt referral to a respiratory specialist for multidimensional assessment of treatable traits and consideration of highly effective monoclonal antibody therapies, which can dramatically reduce exacerbations and OCS dependence.

Although the introduction of monoclonal antibody therapies and other add-on treatments has substantially reduced the need for maintenance OCS therapy, these agents remain overprescribed in asthma management.[16] Persistent OCS use is associated with a broad range of adverse effects affecting multiple organ systems, even at cumulative lifetime doses as low as 500 mg.[17,18] OCS exposure can lead to type 2 diabetes, weight gain, mood changes, cataracts and osteoporosis, with risks increasing as cumulative exposure rises.[17]

Primary care clinicians can substantially reduce the need for OCS prescribing by using a treatable traits approach, prescribing anti-inflammatory reliever therapy as needed in patients with mild asthma and using SMART therapy in those with moderate-to-severe asthma.[19,20]

Resources available to primary care clinicians

A range of practical, evidence-based resources are available to support implementation of a treatable traits approach in asthma management (Box 2). The Centre of Excellence in Treatable Traits provides educational materials, assessment tools and clinical guidance for healthcare professionals. These include the world-first

2. ONLINE RESOURCES TO SUPPORT IMPLEMENTATION OF TREATABLE TRAITS IN ASTHMA

Centre of Excellence in Treatable Traits
Central resource providing evidence-based information, toolkits, educational materials and clinical support resources for healthcare professionals.
https://treatabletraits.org.au

Asthma in Pregnancy Toolkit
Evidence-based guidance and practical resources to support the management of asthma during pregnancy.
https://asthmapregnancytoolkit.org.au

Severe Asthma Toolkit
Comprehensive clinician resource covering the assessment, diagnosis and management of severe asthma.
https://toolkit.severeasthma.org.au

ILO/VCD Toolkit
Practical guidance to assist recognition and management of ILO and VCD.
https://ilovcdtoolkit.org.au

Treatable Traits Infographics and Clinical Resources
A range of downloadable infographics, assessment tools and educational resources available through the Centre of Excellence in Treatable Traits website.
https://treatabletraits.org.au/resources

Abbreviations: ILO = inducible laryngeal obstruction; VCD = vocal cord dysfunction.

Asthma in Pregnancy Toolkit, which supports evidence-based management of asthma during pregnancy; the Severe Asthma Toolkit, which provides a comprehensive approach to the assessment, diagnosis and management of severe asthma; and the ILO/VCD (inducible laryngeal obstruction and vocal cord dysfunction) Toolkit, designed to improve recognition and management of ILO and VCD, conditions that are commonly misdiagnosed as asthma. These toolkits also include a range of infographics and quick-reference guides that can be readily incorporated into primary care practice.

Conclusion

Treatable traits are already embedded in good asthma management in primary care through smoking cessation support, promotion of medication adherence, patient education and identification of triggers. When treatment appears to be failing, addressing super traits and recognising when referral to a respiratory specialist is warranted are the next steps in applying a treatable traits approach. When all levels of the healthcare system work together to address treatable traits in asthma management, the greatest benefit is to the patient, who feels heard, supported and actively involved in their personalised care. MT

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