

Improving outcomes in severe paediatric asthma: New treatments, new possibilities

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A conversation between:



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Diagnosing severe paediatric asthma

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Asthma presentation in children and adolescents

Asthma presentation can vary with age



Early childhood (0–6 years)¹

- Dry or productive cough, wheeze, shortness of breath, troubled breathing
- Often virally triggered



Late childhood (7–11 years)¹

- Allergy-triggered symptoms
- Symptoms may be precipitated by exercise
- Some may have few day-to-day symptoms with exacerbations due to environmental triggers



Adolescence (12–18 years)¹

- Shortness of breath, wheeze in response to triggers, chest pain or tightness, cough

Allergic rhinitis in early childhood is often the first stage towards asthma development¹

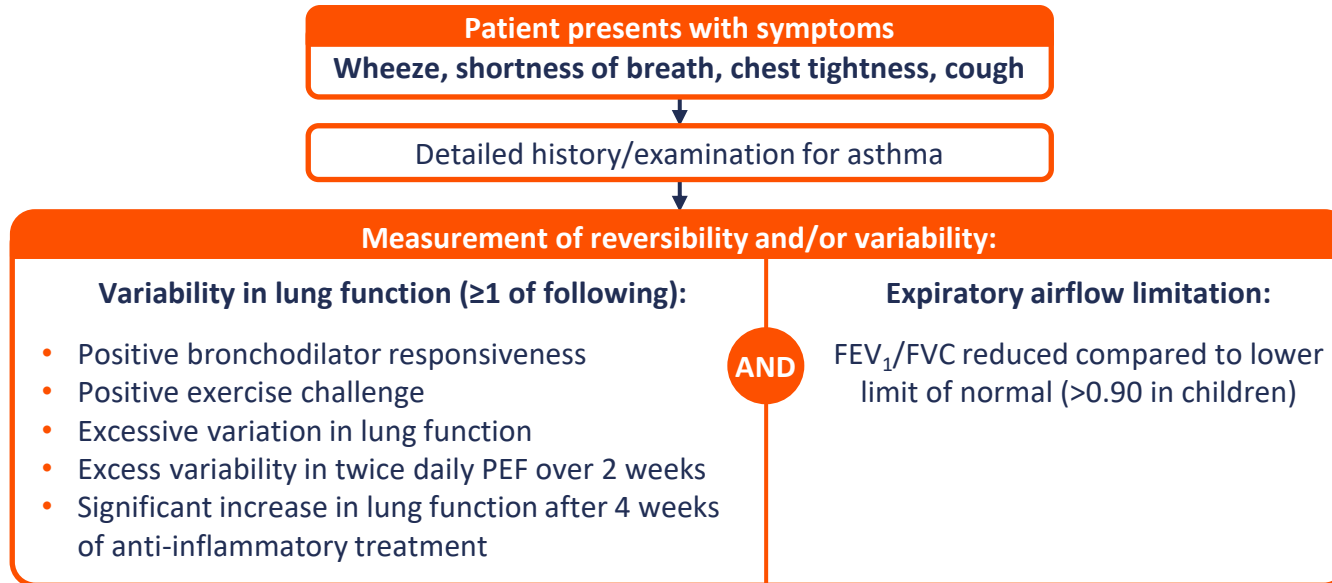
Symptoms that are worse at night or early morning or that vary over time are characteristic of asthma²

Symptoms can also be precipitated by triggers³

- Exercise
- Airborne allergens
- Viral infections
- Second-hand smoke
- Air temperature changes

Diagnosing severe paediatric asthma

Diagnosis is based on symptoms and variable expiratory airflow limitation



If bronchodilator response is negative, repeat spirometry may be performed after withholding bronchodilators or when symptomatic



Asthma severity is defined by patient response to ICS-LABA therapy

Defining difficult-to-treat and severe asthma

Initial asthma treatment is based on ICS with or without LABA



Severity based on assessment after 2–3 months of treatment¹

Difficult-to-treat asthma¹

- Uncontrolled despite medium- or high-dose ICS plus a second controller (usually a LABA) or with maintenance OCS
- OR**
- Requires high-dose treatment to reduce the risk of exacerbation

Severe asthma

- Uncontrolled despite adherence to maximal high-dose ICS-LABA and management of contributory factors¹
- Requires frequent OCS bursts or daily OCS²
- Associated with overuse of SABA³

Modifiable contributory factors may influence severity and must be excluded before diagnosis¹



Incorrect diagnosis



Poor inhaler technique



Poor treatment adherence



Multimorbidity, e.g. rhinosinusitis, GORD, obesity, obstructive sleep apnoea



Ongoing allergen/irritant exposure

GORD, gastro-oesophageal reflux disease; ICS, inhaled corticosteroids; LABA, long-acting beta₂-agonist; OCS, oral corticosteroids; SABA, short-acting beta₂-agonist.

1. Global Initiative for Asthma. Available at: <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf> (accessed 14 November 2022); 2. Bourdin A, et al. *Eur Respir Rev.* 2020;29:190085; 3. Noorduyn S, et al. *ERJ Open Res.* 2022;8:00140-2022.

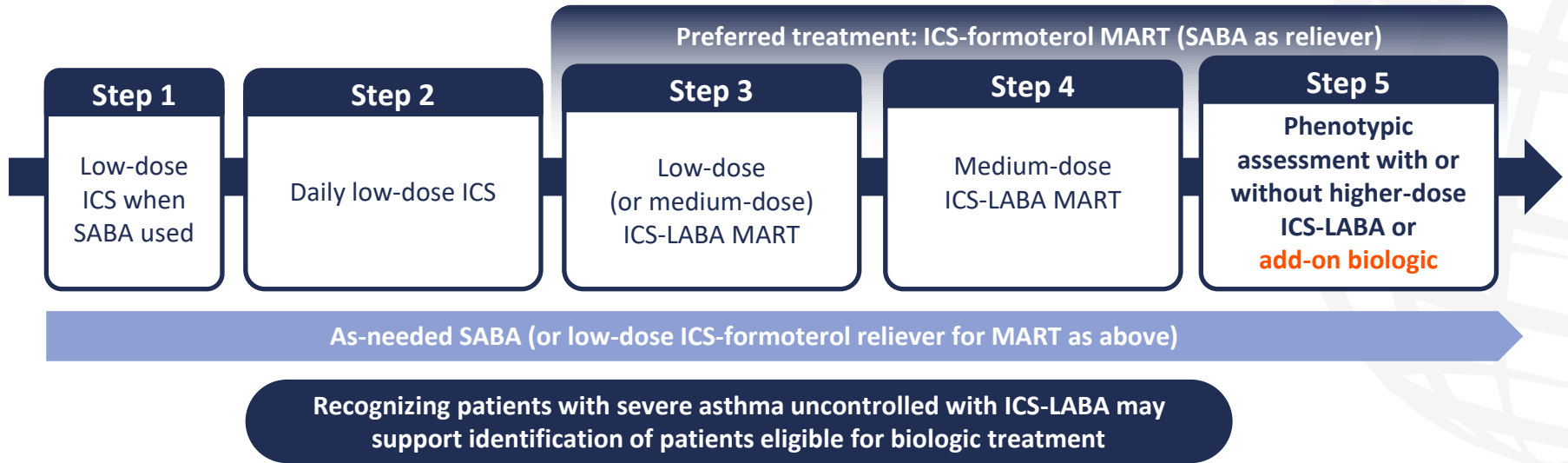
Biologics for severe paediatric asthma

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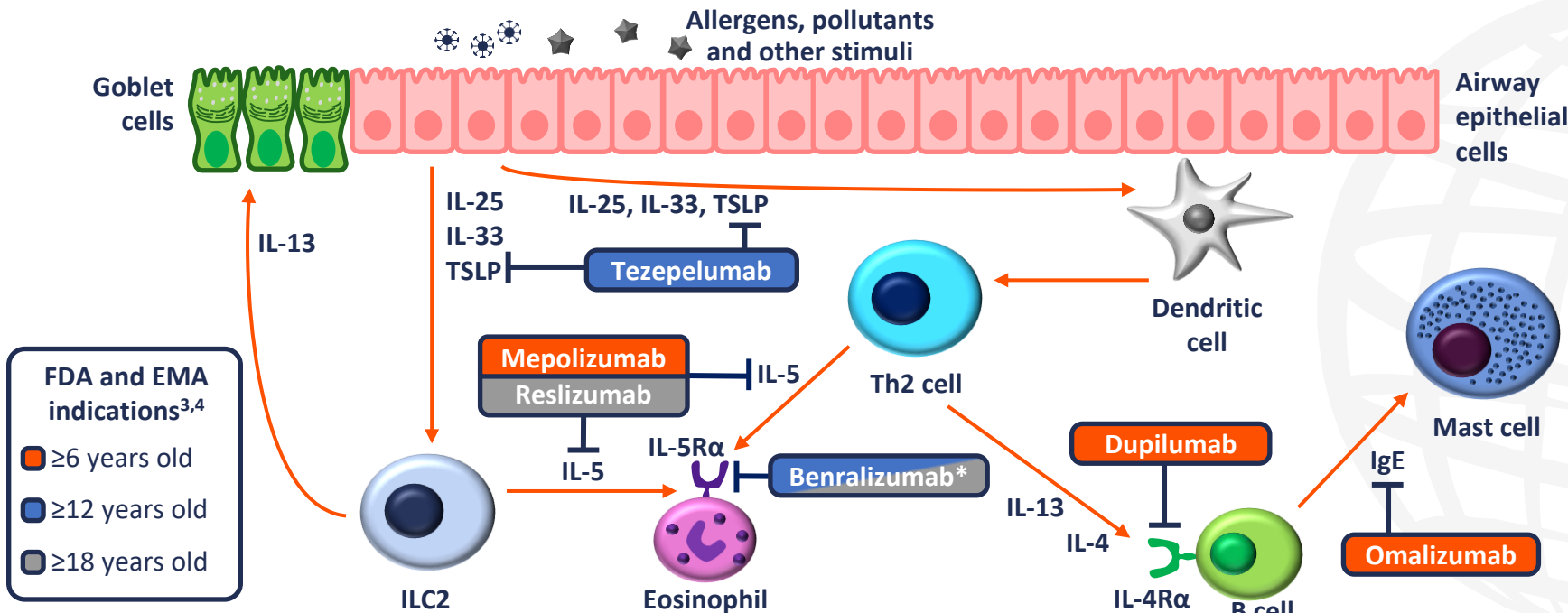


Stepwise approach to initiating asthma therapy

In children aged 6–11 years, biologics are recommended when ICS or LABA therapy is not sufficient to control symptoms



Biologic treatment targets in severe asthma^{1,2}



* Benralizumab is indicated for adult patients by the EMA, and for patients aged 12 years or older by the FDA.

EMA, European Medicines Agency; FDA, US Food and Drug Administration; IgE, immunoglobulin E; IL, interleukin; IL-4R α , IL-4 receptor alpha; IL-5R α , IL-5 receptor alpha; ILC2, group 2 innate lymphoid cell; Th2, T helper 2; TSLP, thymic stromal lymphopoietin.

1. Brusselle G, et al. *N Engl J Med.* 2022;386:157–71; 2. Pelaia C, et al. *Front Immunol.* 2020;11:6033123; 3. EMA. Summary of product characteristics. Available at: www.ema.europa.eu/en/medicines/ (accessed 14 November 2022); 4. FDA. Prescribing information. Available at: www.accessdata.fda.gov/scripts/cder/daf/index.cfm (accessed 14 November 2022).

Optimal management of severe paediatric asthma

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Managing modifiable risk factors



Medication

- SABA overuse is associated with an increased rate of exacerbations and increased risk of mortality^{1,2}



Comorbidity control

- Allergic rhinitis is associated with exacerbation,³ which can be managed with effective treatment⁴



Poor treatment adherence

- Improved adherence can reduce severe exacerbations⁵
- Inhaler technique and adherence should be monitored⁶



Environmental exposures^{7,8}

- Second-hand smoke
- Allergen exposure (in early childhood)
- Air pollution
- Mould in the home
- Physical inactivity



The GINA Global Strategy recommends avoiding risk factors, such as smoke or household mould, where possible,⁶ which may help reduce asthma symptoms⁷

GINA, Global Initiative for Asthma; SABA, short-acting beta₂-agonist.

1. Noorduyn S, et al. *ERJ Open Res.* 2022;8:00140-2022; 2. Nwaru B, et al. *Eur Respir J.* 2020;55:1901872; 3. Kang H-R, et al. *BMJ Open.* 2018;8:e020825;

4. Yu C-L, et al. *J Microbiol Immunol Infect.* 2019;52:991–9; 5. Averell C, et al. *Ther Adv Respir Dis.* 2022;16:17534666221116997; 6. Global Initiative for Asthma.

Available at: <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf> (accessed 14 November 2022);

7. Azalim S, et al. *Ann Agric Environ Med.* 2014;21:59–63; 8. Abreo A, et al. *Clin Trans Med.* 2018;7:15.