

For use by UK Healthcare Professionals

Fundamentals of Mild/Moderate Asthma

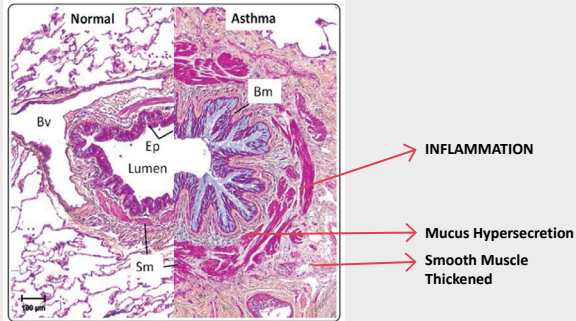
An overview of managing mild/ moderate asthma

This non promotional discussion guide is part of the SENTINEL Plus quality improvement framework, which has been funded by AstraZeneca and co-developed with Hull University Teaching Hospitals NHS Trust, and is intended for UK Healthcare Professionals'.

Inflammation is central to symptoms worsening and exacerbations¹

This figure shows healthy/ 'normal' asthmatic (left side) and severe asthmatic (right side) airway.

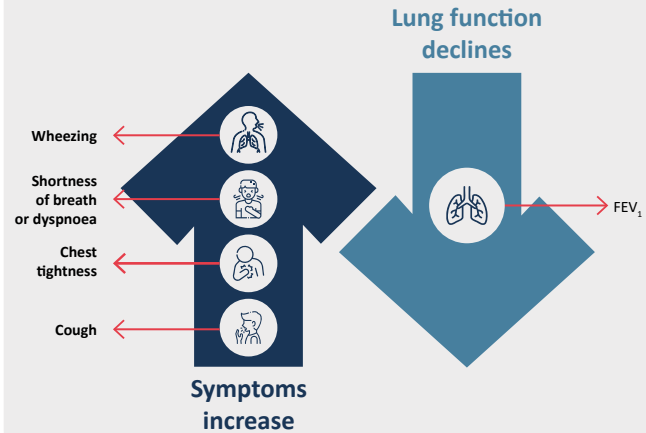
The asthmatic airway shows mucus hypersecretion, thickened smooth muscle, and inflammation.¹



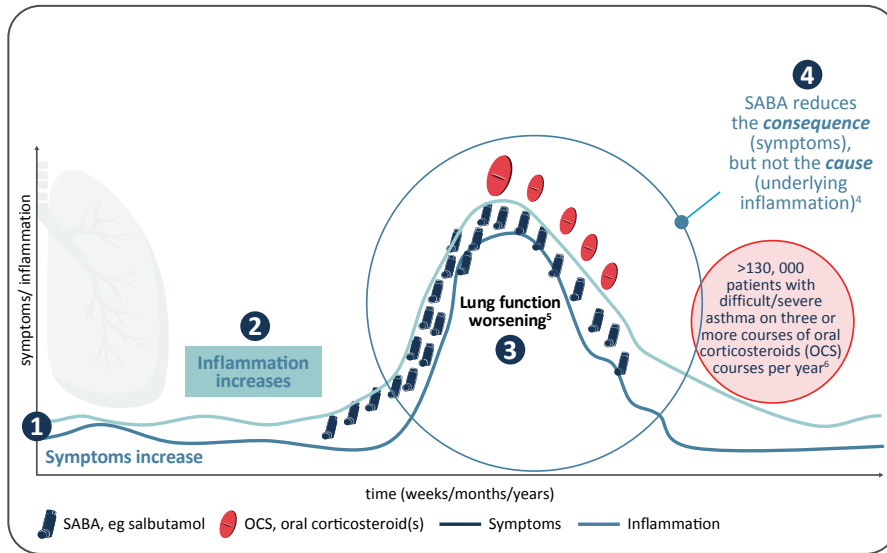
Bm = basement membrane; Bv = blood vessel; Ep = epithelium; SM = smooth muscle

Image adapted from Chang CF, et al. Carbohydrates - Comprehensive Studies on Glycobiology and Glycotechnology [Internet]. *InTech*. 2012²

During an asthma exacerbation, symptoms increase and lung function decreases.³



Asthma is a chronic inflammatory variable disease with day-to-day variability in symptoms⁴



1 Asthma is a chronic inflammatory disease with day-to-day variability in symptoms.⁴

2 Inflammation also increases during an exacerbation (indicated by FeNO levels).⁷

3 During an exacerbation lung function worsens.⁵

4 In some instances, short-courses of OCS may be prescribed to reduce the inflammation, therefore also reducing symptoms.⁵
SABA use reduces the consequence (symptoms), but not the cause (inflammation).³

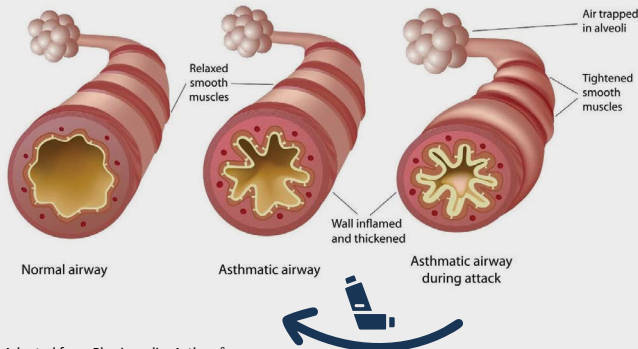
The animation is for descriptive/illustrative purposes only.

OCS = oral corticosteroid(s); FeNO = fractional exhaled nitric oxide; SABA = short-acting β_2 -agonist.

SABA: Mechanism of Action & Exposing the risk



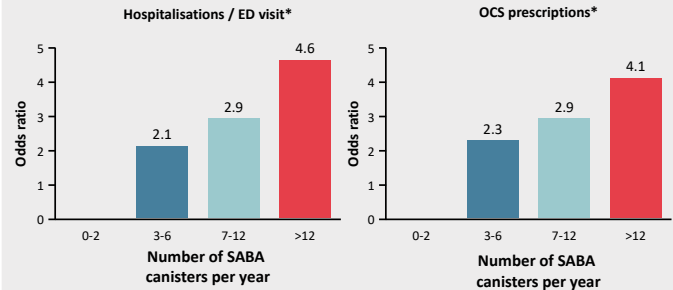
SABA relaxes the constricted muscle, leaving an inflamed asthmatic airway. However, SABA does not treat the underlying inflammation.



Adapted from Physiopedia. Asthma⁸

When a patient uses ≥ 3 SABA canisters per year, they are defined as being at risk or over reliant.^{9,10}

SABA over-reliance is associated with a significantly increased risk of asthma exacerbation, including hospitalisation and use of oral corticosteroids.¹¹



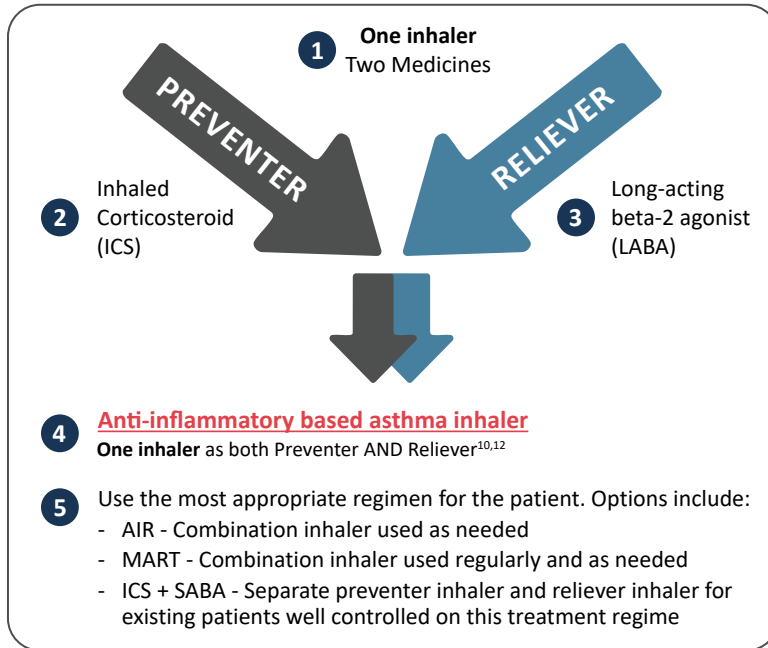
Adapted from Schatz *et al.* in *J Allergy Clin Immunol.* 2006¹¹

*Adjusted for year 2002 use in the predictive validity cohort (n=62,369).

Study based on survey of 2250 health maintenance organisation members (construct validity sample) and predictive validity sample (n=62369) from the Southern California Kaiser Permanente asthma database. Number of hospitalisations and ED visits were compared against SABA canisters dispensed in 12 months (based on a 200 puff inhaler). Asthma ED visits and hospitalisations were combined into the single outcome of emergency hospital care for asthma (defined as at least one hospitalisation or ED visit for asthma).

ED = emergency department; OCS = oral corticosteroid(s); SABA = short-acting β_2 -agonist.

Anti-inflammatory based asthma management



AIR = anti-inflammatory reliever; ICS = Inhaled Corticosteroid; LABA = Long-Acting Beta₂-Agonist
MART = Maintenance and Reliever Therapy; SABA = short-acting β_2 -agonist.

1

One inhaler with an ICS and a LABA combination is used. Note that patients well controlled on an ICS inhaler and a SABA inhaler may not need a combination inhaler.

2

The ICS treats inflammation (a 'preventor').

3

The LABA (called formoterol) relaxes the airways and improves symptoms (a 'reliever'). It replaces the need for a SABA inhaler.

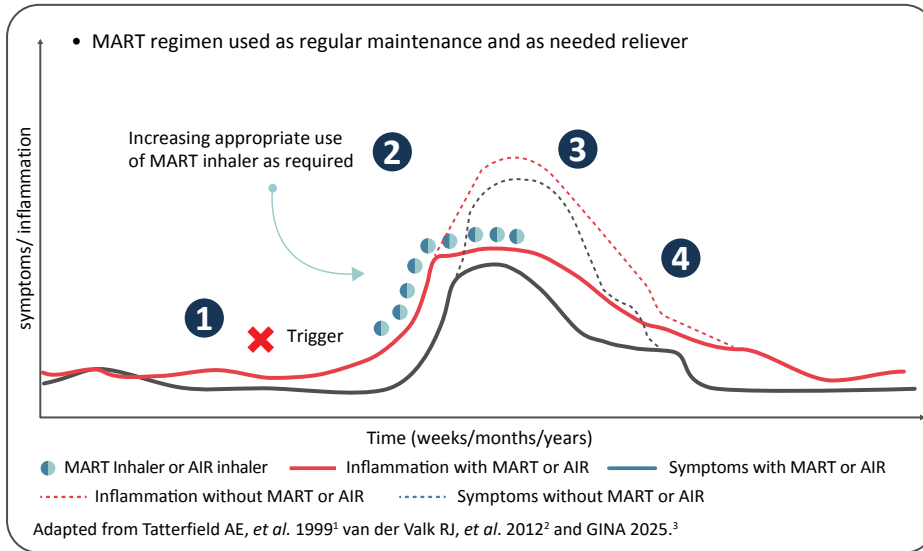
4

As-needed Anti-Inflammatory Reliever (AIR) therapy is used as needed for the relief of asthma symptoms. Maintenance and Reliever Therapy (MART) is used regularly to maintain asthma control, and also used as needed for the relief of asthma symptoms.

5

An alternative to an anti-inflammatory based asthma inhaler is to use a preventer inhaler (eg. an ICS inhaler) and a reliever inhaler (eg. SABA) for existing patients well controlled on this treatment regime.

The Combination Inhaler approach



1

When a patient is exposed to an asthma trigger, anti-inflammatory-based asthma management is used.

2

Each time an AIR or MART inhaler is used, an additional dose of ICS and Formoterol is delivered to the airways.

3

There is relief of symptoms, and the inflammation is addressed.

4

An AIR or MART inhaler reduces inflammation and asthma symptoms.



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References

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