



Overall Asthma Control With SMART

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Outlines

- Basic asthma disease
- Diagnosis of asthma-spirometry
- Asthma treatment options
- The SMART approach – what makes this different from other forms of therapy?

Definition of Asthma

- A **chronic inflammatory disorder** of the airways
- Chronic inflammation is associated with airway **hyperresponsiveness** that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing
- Widespread, variable, and often **reversible** airflow limitation

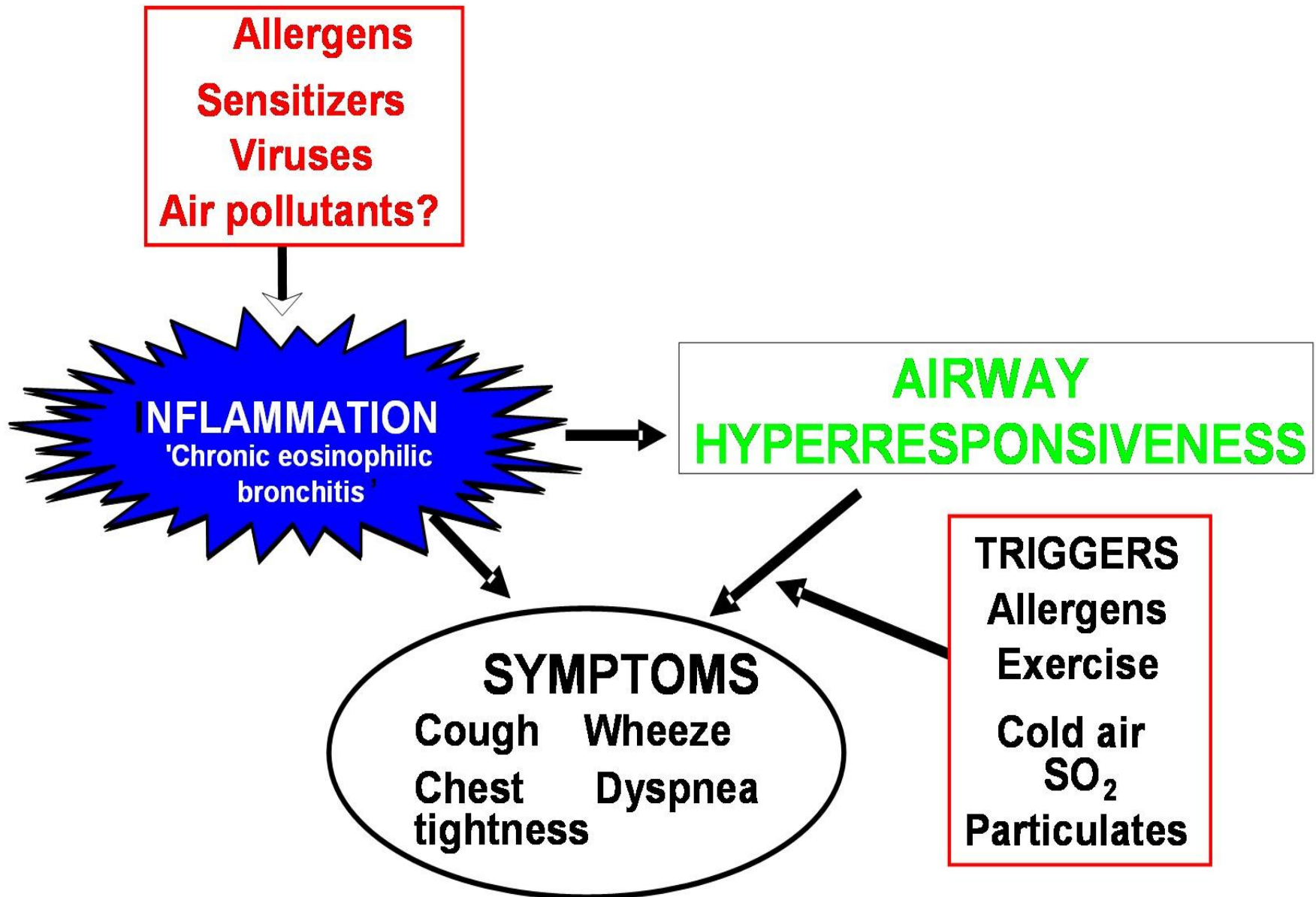
Global Asthma Burden

- An estimated 235 million people worldwide suffer from asthma.
- According to the WHO, number of asthma cases will grow by more than 100 million by the year 2025
- Approximately, 250,000 deaths are reported due to asthma every year

Burden of Asthma

- Health care expenditures are on increasing trend
- Developed economies might expect to spend 1-2 percent of total health care expenditures on asthma. Developing economies likely to face increased demand
- Poorly controlled asthma is expensive; investment in prevention medication likely to yield cost savings in emergency care

Mechanisms: Asthma Inflammation



Risk Factors for Asthma

- **Host factors:** predispose individuals to, or protect them from, developing asthma
- **Environmental factors:** influence susceptibility to development of asthma in predisposed individuals, precipitate asthma exacerbations, and/or cause symptoms to persist

Factors that Exacerbate Asthma

- Allergens
- Respiratory infections
- Exercise and hyperventilation
- Weather changes
- Sulfur dioxide
- Food, additives, drugs

Factors that Influence Asthma Development and Expression

Host Factors

- Genetic
 - Atopy
 - Airway hyperresponsiveness
- Gender
- Obesity

Environmental Factors

- Indoor allergens
- Outdoor allergens
- Occupational sensitizers
- Tobacco smoke
- Air Pollution
- Respiratory Infections

Is it Asthma?

- Recurrent episodes of wheezing
- Troublesome cough at night
- Cough or wheeze after exercise
- Cough, wheeze or chest tightness after exposure to airborne allergens or pollutants

Asthma Diagnosis

- History and patterns of symptoms
- Measurements of lung function
 - Spirometry
 - Peak expiratory flow
- Measurement of airway responsiveness
- Measurements of allergic status to identify risk factors
- Extra measures may be required to diagnose asthma in children 5 years and younger and the elderly


Why Perform Spirometry?

- Measure airflow obstruction to help make a definitive diagnosis of COPD
- Confirm presence of airway obstruction
- Assess severity of airflow obstruction in COPD
- Detect airflow obstruction in smokers who may have few or no symptoms
- Monitor disease progression in COPD
- Assess one aspect of response to therapy
- Assess prognosis (FEV_1) in COPD
- Perform pre-operative assessment


Levels of Asthma Control

GINA 2012: Levels of asthma control

<i>Characteristic</i>	Controlled (All of the following)	Partly controlled (Any present in any week)	Uncontrolled
Daytime symptoms	None (2 or less / week)	More than twice / week	3 or more features of partly controlled asthma present in any week
Limitations of activities	None	Any	
Nocturnal symptoms / awakening	None	Any	
Need for rescue / “reliever” treatment	None (2 or less / week)	More than twice / week	
Lung function (PEF or FEV₁)	Normal	< 80% predicted or personal best (if known) on any day	
Exacerbation	None	One or more / year	1 in any week

 Reduce

GINA 2012: Treatment steps

Increase 

Step 1

Step 2

Step 3

Step 4

Step 5

Asthma education

Environmental control

As-needed rapid-acting β_2 -agonist

Controller options	Select one	Select one	Add one or more	Add one or both
	Low-dose ICS	Low-dose ICS plus LABA	Medium- or high-dose ICS plus LABA	Oral corticosteroid (lowest dose)
	Leukotriene modifier	Medium- or high-dose ICS	Leukotriene modifier	Anti-IgE treatment
		Low-dose ICS plus leukotriene modifier	Sustained release theophylline	
		Low-dose ICS plus sustained release theophylline		

ICS: inhaled glucocorticosteroid *Regular dosing with short- and long-acting β_2 -agonist is not advised unless accompanied by regular use of inhaled glucocorticosteroid*

LABA: long-acting β_2 -agonist

Goals of Long-term Management

- Achieve and maintain control of symptoms
- Maintain normal activity levels, including exercise
- Maintain pulmonary function as close to normal levels as possible
- Prevent asthma exacerbations
- Avoid adverse effects from asthma medications
- Prevent asthma mortality

Factors Involved in Non-Adherence

Medication Usage

- Difficulties associated with inhalers
- Complicated regimens
- Fears about, or actual side effects
- Cost
- Distance to pharmacies

Non-Medication Factors

- Misunderstanding/lack of information
- Fears about side-effects
- Inappropriate expectations
- Underestimation of severity
- Attitudes toward ill health
- Cultural factors
- Poor communication

What is Symbicort?

What is Symbicort?

Budesonide

- Inhaled Corticosteroid (ICS)
- Acute effects: inflammation ↓, lung function ↑
- Dosing frequency ↑ → asthma control ↑

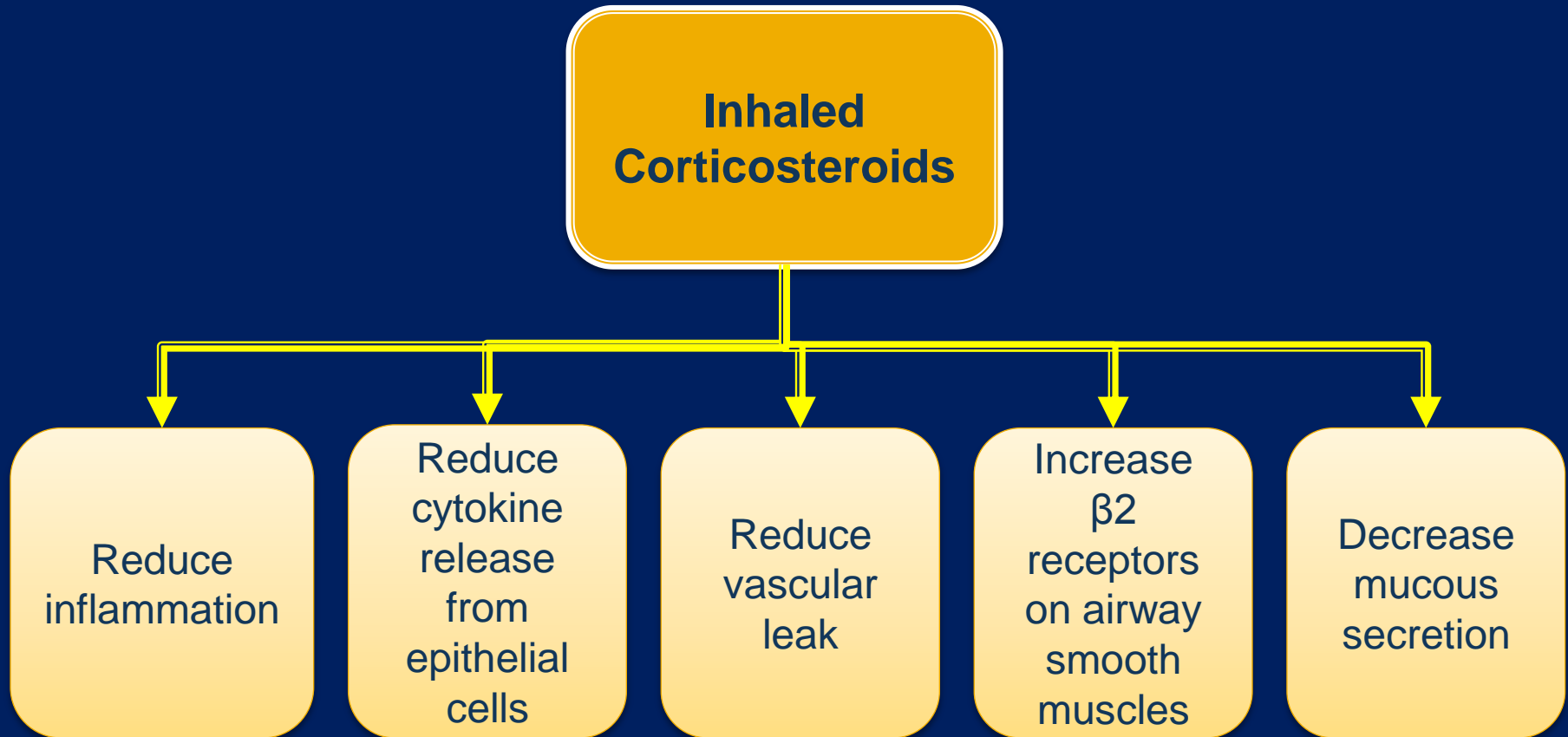
Formoterol

- Long Acting Beta Agonist (LABA)
- Rapid onset of bronchodilatation
- Safe even at higher doses

Fixed combination: Budesonide - formoterol

- Synergistic mode of action
- Optimal timing and dose-titration of medication
- ICS non-adherence less likely

Overview of ICSs



1. Kudo M, et al *Front Microbiol.* 2013;4:263.

2. Global Initiative for Asthma. 2012.

3. Global Initiative for Chronic Obstructive Lung Disease I. 2013.

4. Barnes PJ. *Pharmaceuticals.* 2010;3:514-540.

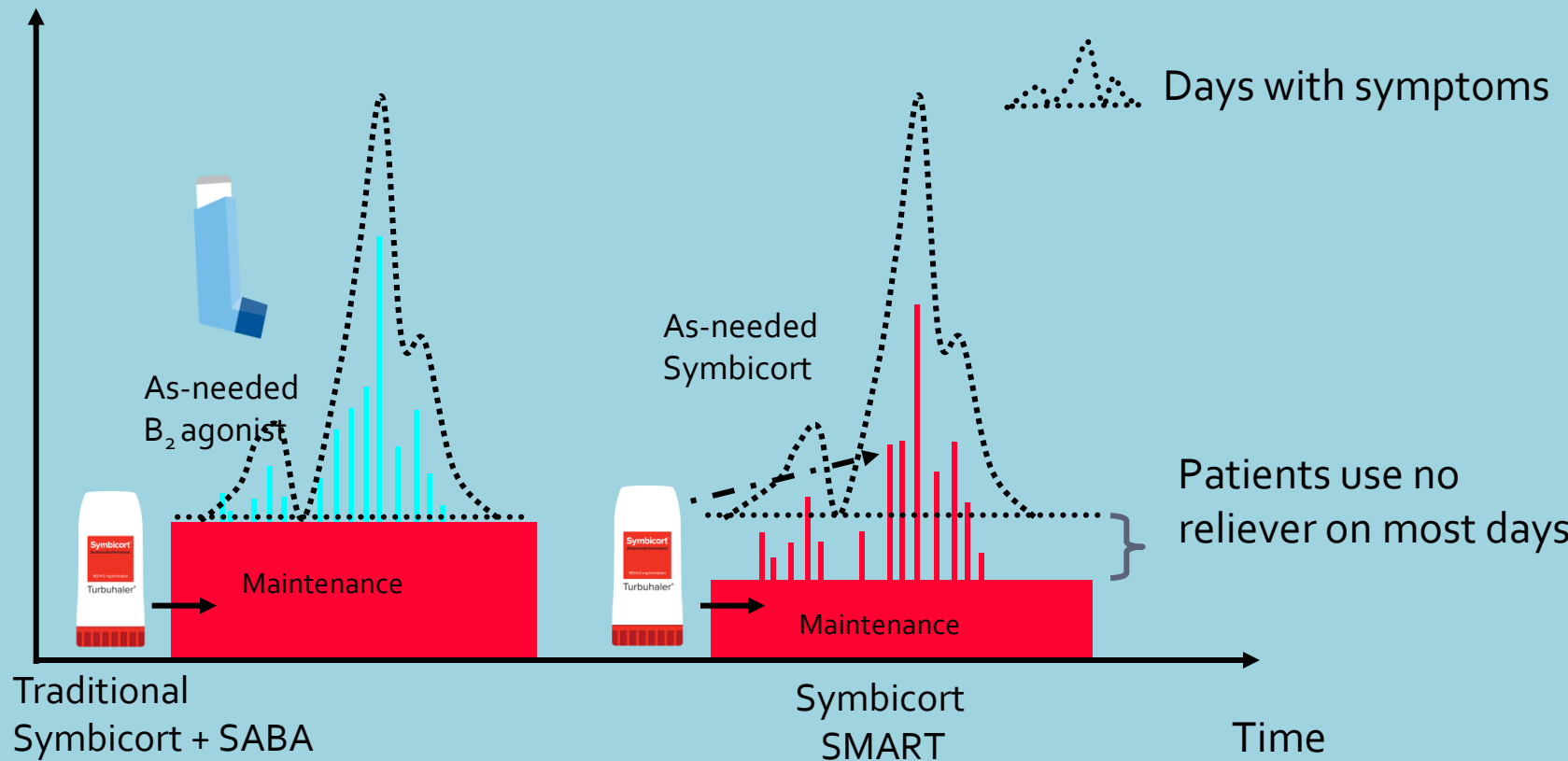
What is SMART?
Symbicort Maintenance
And Reliever Therapy.

SABA use in Asthma

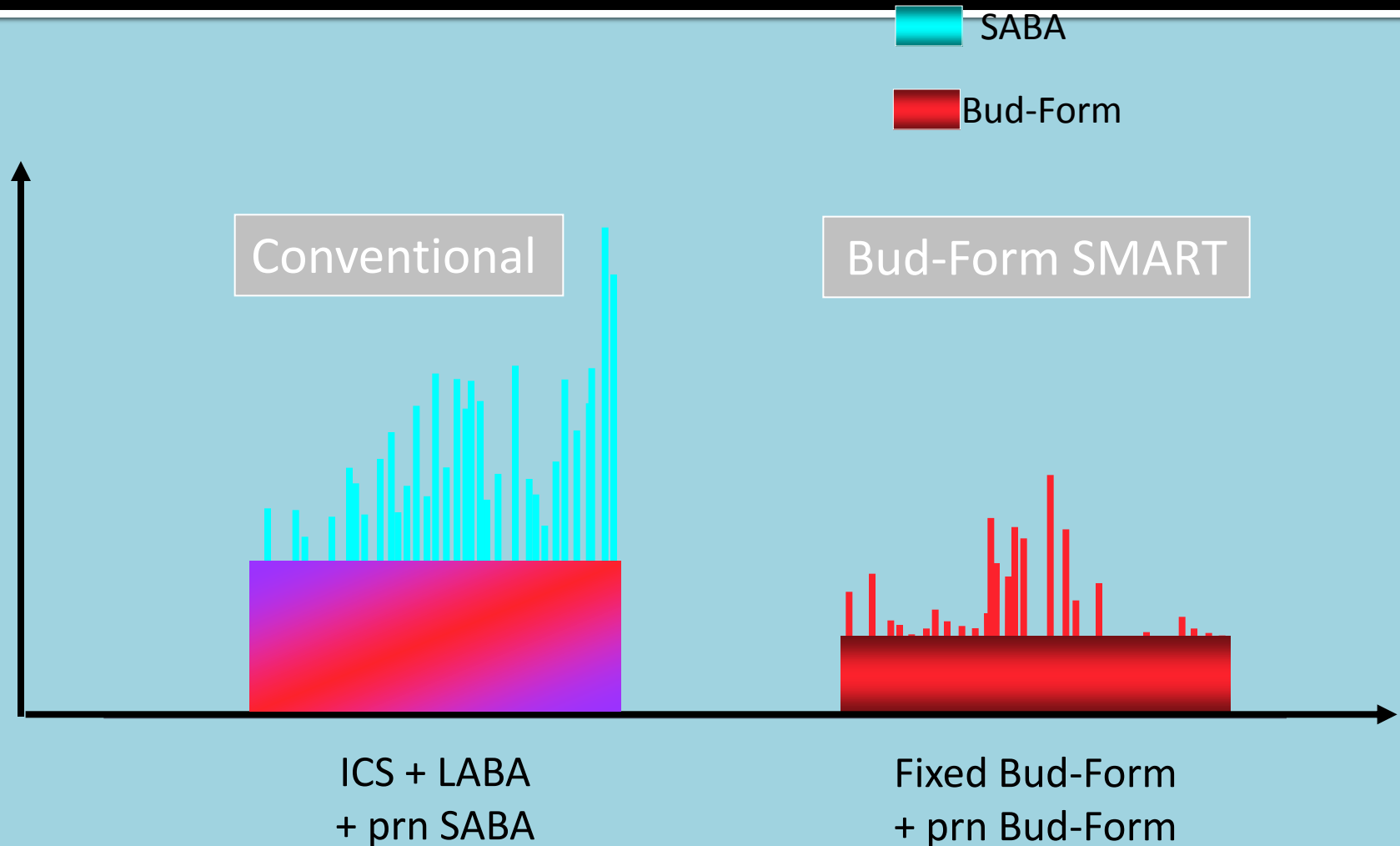
- Inhaled short-acting β_2 -agonists (SABAs) used for symptom relief are the *most widely used asthma medication worldwide*
- Regular use of SABAs has been shown to:
 - worsen asthma control
(Sears et al. Lancet 1990;336:1391-6)
 - promote airway inflammation
(Gauvreau GM, et al. AJRCCM 1997;156:1738-45)
- Overuse of SABAs is associated with increased asthma mortality (Suissa S et al. AJRCCM 1994;149:604-10)

Symbicort SMART differs from the traditional asthma management approach

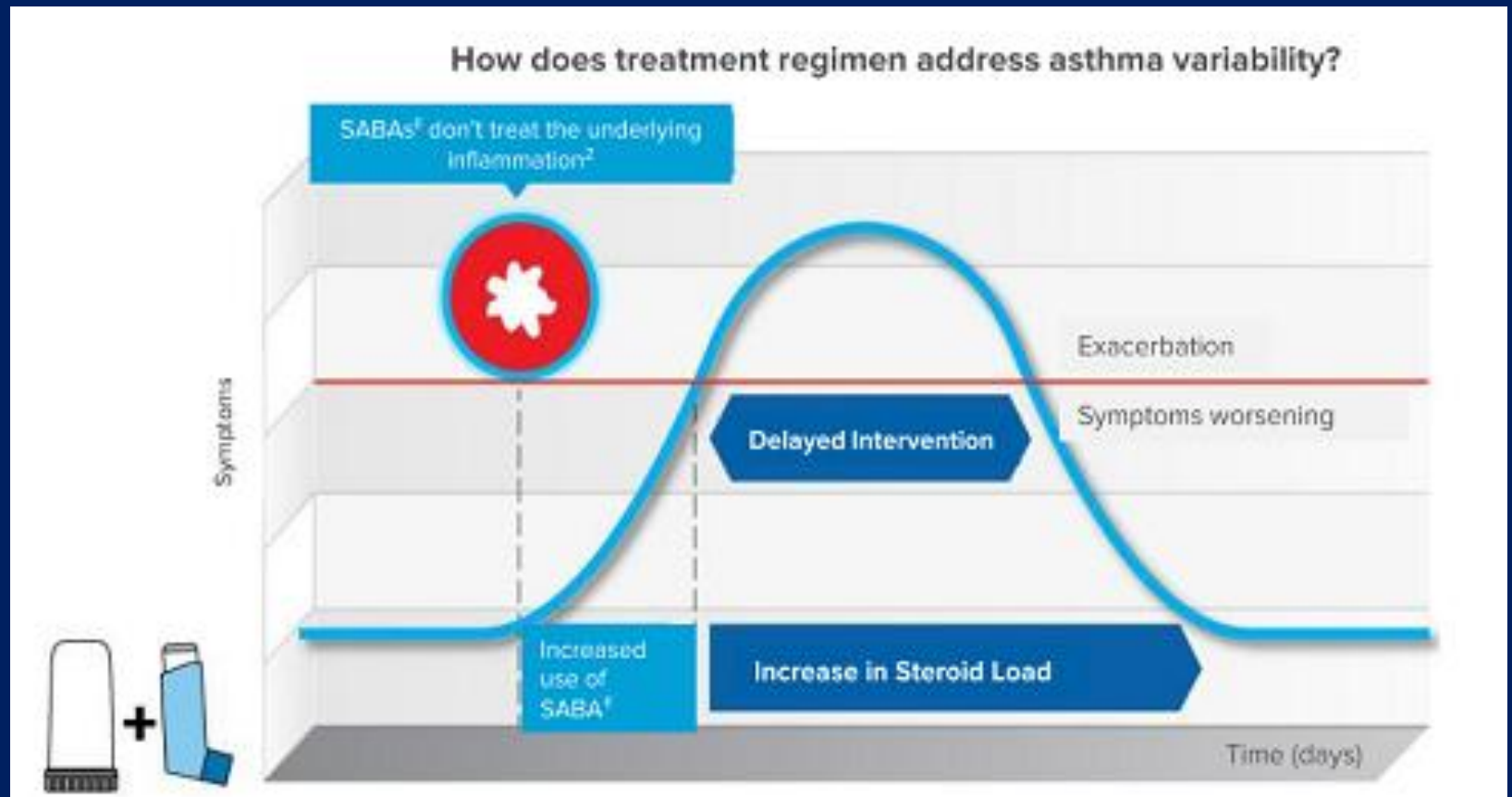
Daily medication use
(maintenance and relief)



Evolution of asthma treatment

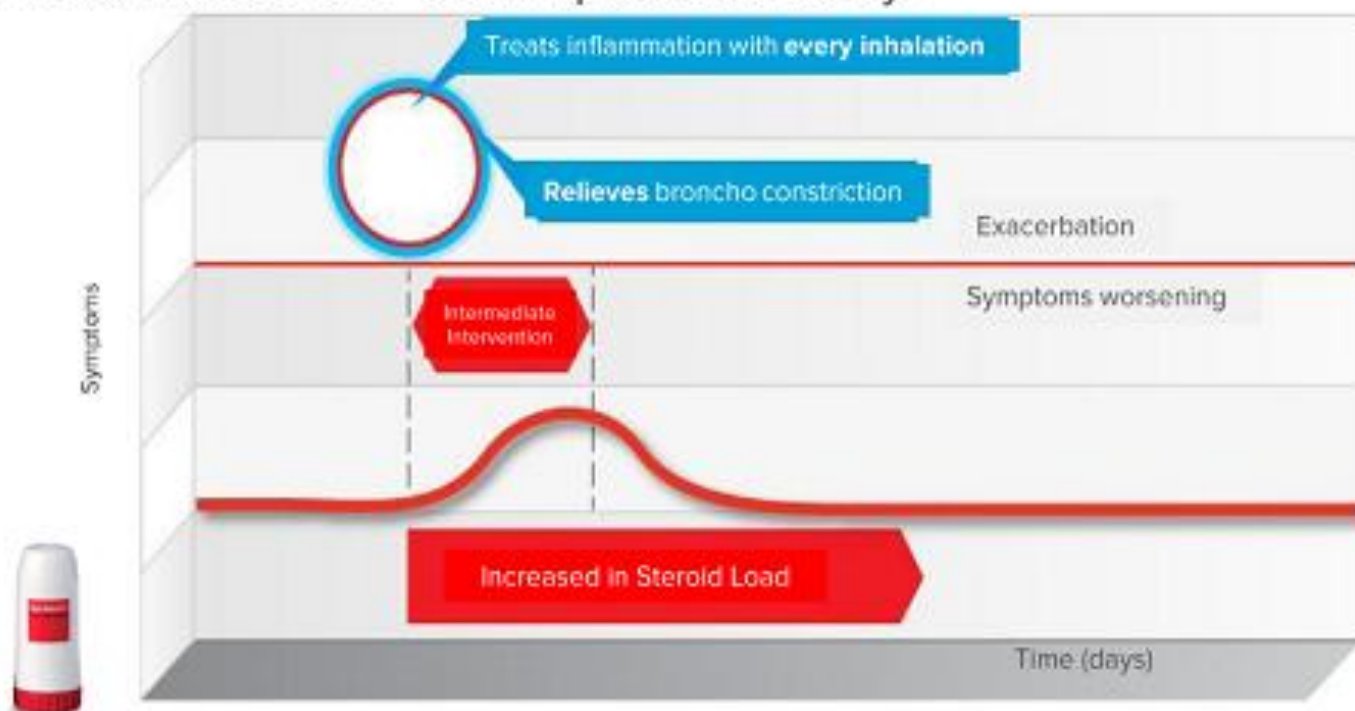


With conventional therapy



Maintenance and Reliever therapy with Budesonide/Formoterol

It is the **timing of the increase** in ICS dose – resulting from as-needed use of budesonide/formoterol in response to symptoms – **rather than the total inhaled dose of ICS^T** that improves efficacy.¹



THE END