# The Summary and Context of Asthma Management in Thailand
# What is new in GINA 2021

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Ramathibodi Hospital Mahidol University

**Virtual meeting 2021**

Live Virtual Meeting

Thai Asthma Council and Association
สมาคมสภาองค์กรโรคหืดแห่งประเทศไทย

# The NEW GINA 2021

## The Summary and Context of Asthma Management in Thailand

The Panel Discussion endorsed by Thai Asthma Council

| | | |
|---|---|---|
| 11.40-11.45 | | **Opening and Welcome**<br>Orapan Poachanukoon MD, PhD. TU-CAAP, President of TAC |
| 11.45-12.00 | Episode 1 | **Guidance for managing COVID-19 and asthma**<br>- Is COVID-19 increased in asthma patients?<br>- Is asthma treatment (ICS, OCS, biologic) affecting COVID-19?<br>- Dealing with asthma exacerbation coexisting with COVID-19<br>Moderator: Orapan Poachanukoon MD, PhD. TU-CAAP, President of TAC<br>Speaker: Nittha Oer-areemitr MD Pulmonary and Critical Care Physician |
| 12.00-12.15 | Episode 2 | **What is new in GINA 2021?**<br>- Does mild asthma matter and is intermittent asthma significant?<br>- How to define severe asthma in 2021?<br>- Is GINA 2021 new figure easy for clinical practice?<br>Moderator: Orapan Poachanukoon MD, PhD. TU-CAAP, President of TAC<br>Speaker: Theerasuk Kawamatawong MD, FCCP Pulmonary and Critical Care Physician |
| 12.15-12.35 | Episode 3 | **Asthma guidelines: Adult vs. pediatric and local vs. global perspectives**<br>- Asthma control and future risk assessment<br>- Asthma management guidelines: Difference and similarity between adults and children<br>- GINA and other guideline include TAC<br>Moderator & Speaker: Orapan Poachanukoon MD, PhD. TU-CAAP, President of TAC |
| 12.35-13.00 | Episode 4 | **Panel Discussion: Asthma management in Thailand for all age groups: Real life Practice**<br>Moderator: Orapan Poachanukoon MD, PhD. TU-CAAP, President of TAC<br>Speaker 1: Watchara Boonsawat MD, PhD, President of EACC network Thailand<br>Speaker 2: Nittha Oer-areemitr MD Pulmonary and Critical Care Physician<br>Speaker 3: Thitiwat Sriprasart MD Pulmonary and Critical Care Physician<br>Speaker 4: Harutai Kamalaporn MD Pediatric Pulmonary Physician<br>Speaker 5: Theerasuk Kawamatawong MD, FCCP Pulmonary and Critical Care Physician |
| | | **Closing remark**<br>Orapan Poachanukoon MD, PhD. TU-CAAP, President of TAC |

Moderator/Speaker
Orapan Poachanukoon MD, PhD.
TU-CAAP, President of TAC

Speaker
Watchara Boonsawat MD, PhD,
President of EACC network Thailand

Speaker
Theerasuk Kawamatawong MD, FCCP
Pulmonary and Critical Care Physician

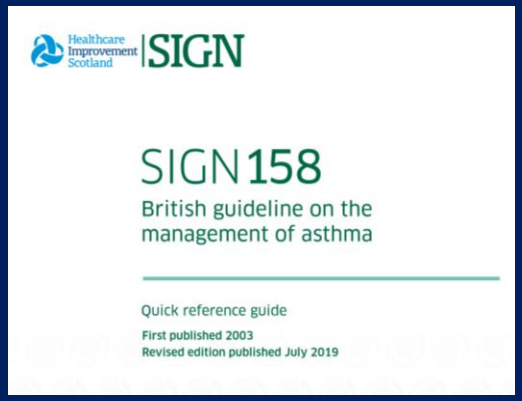
Speaker
Harutai Kamalaporn MD
Pediatric Pulmonary Physician

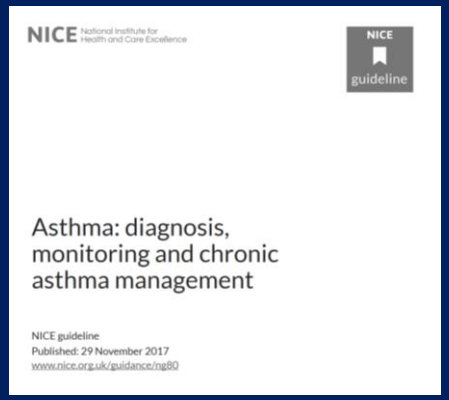
Speaker
Thitiwat Sriprasart MD
Pulmonary and Critical Care Physician

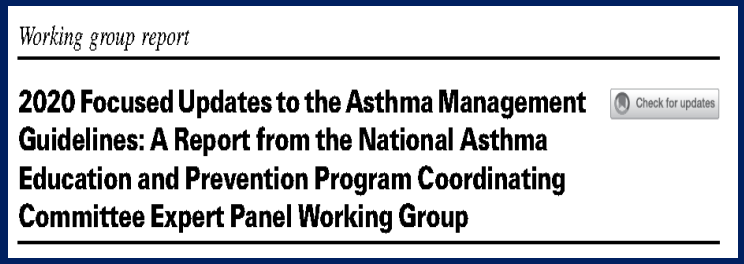
Speaker
Nittha Oer-areemitr MD
Pulmonary and Critical Care Physician

**Date: Tuesday 25th May 2021 / 11.40-13.00**

**JOIN NOW!**




July 2019

February 2020

December 2020



2020

2021

April 2020

GLOBAL INITIATIVE FOR ASTHMA

April 2021

GLOBAL INITIATIVE FOR ASTHMA

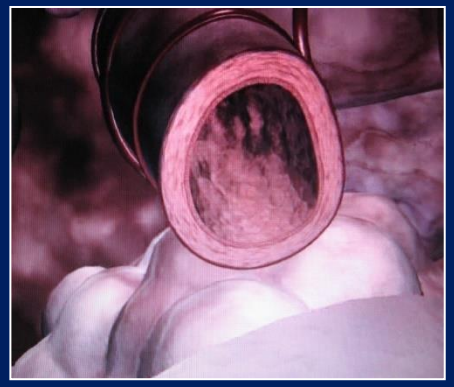
**GINA**

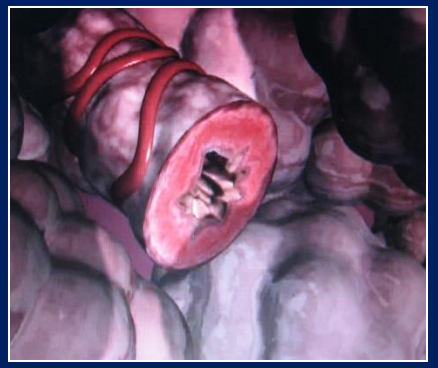
(Global Strategies for Asthma Management and Prevention)

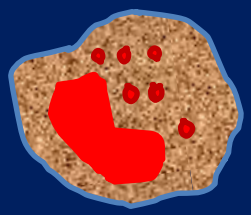
GLOBAL INITIATIVE FOR ASTHMA

# Asthma = Airway inflammation + Airway obstruction

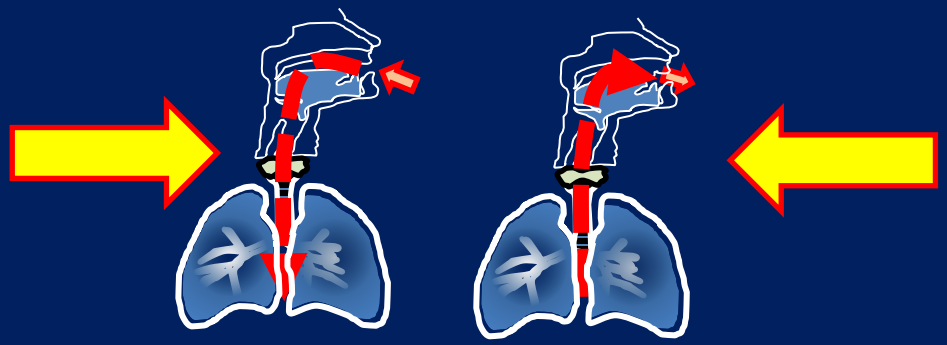
Normal airway | Early asthma attack | Severe asthma attack

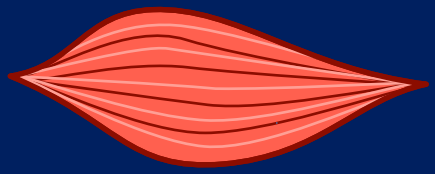






Eosinophil



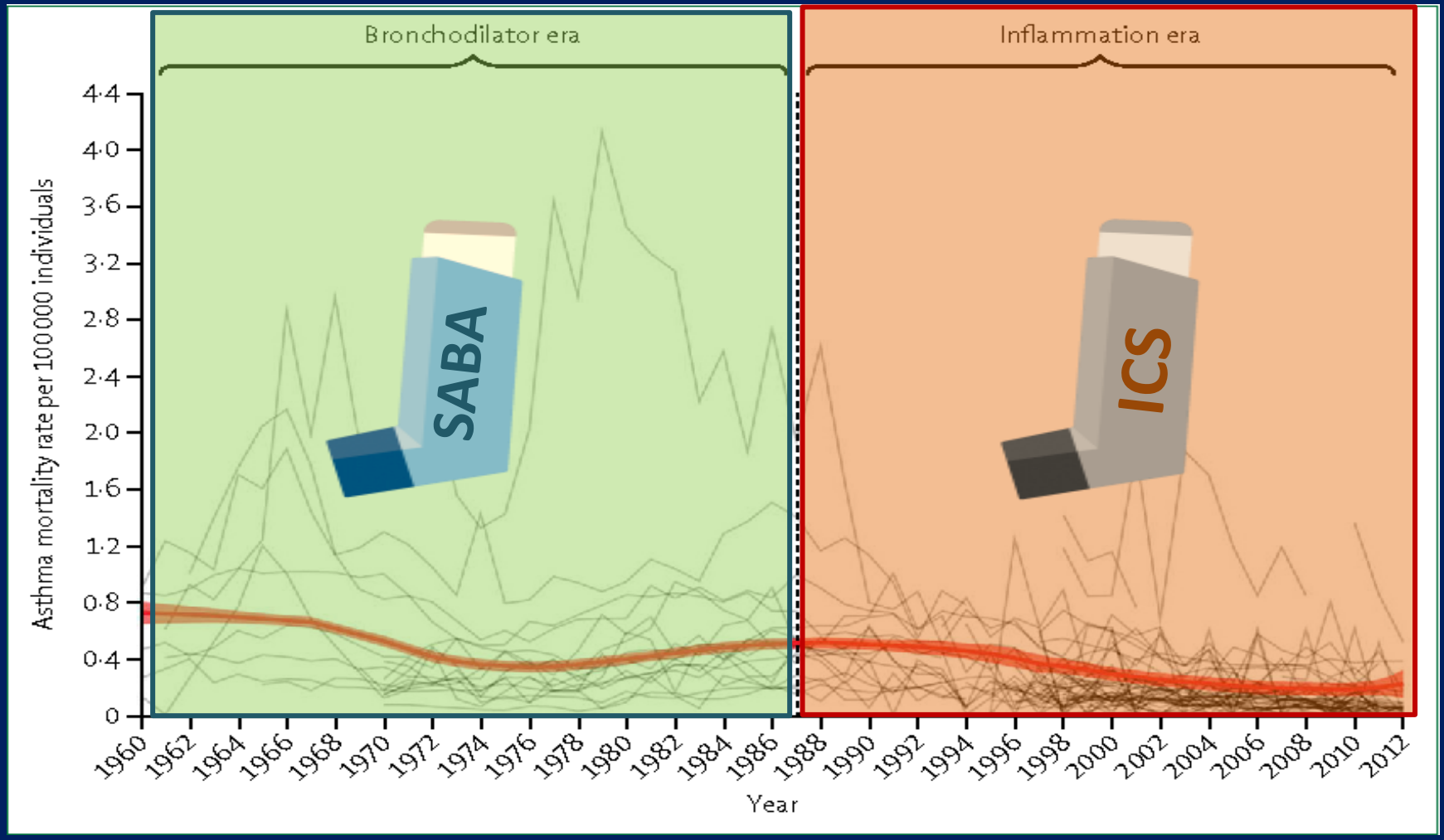


Airway smooth muscle

Global Strategies for Asthma Management and Prevention GINA report

# From Bronchodilator to Inflammation Era

## Asthma mortality in patients 5–34 y in 46 countries (1960-2012)




Ian D. Pavord et al *Lancet* 2007. DOI:10.1016/S0140-6736(17)30879-6

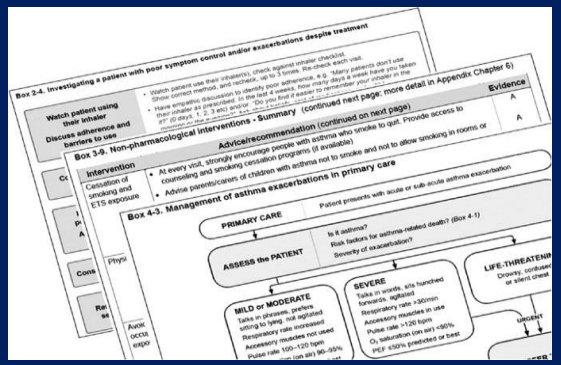
# Evolution of GINA strategy

**Paradigm change in the conception of guidelines for the management and treatment of asthma**

**Control-based guidelines**
**2006-Present**

**Severity-based guidelines**
**1995-2002**

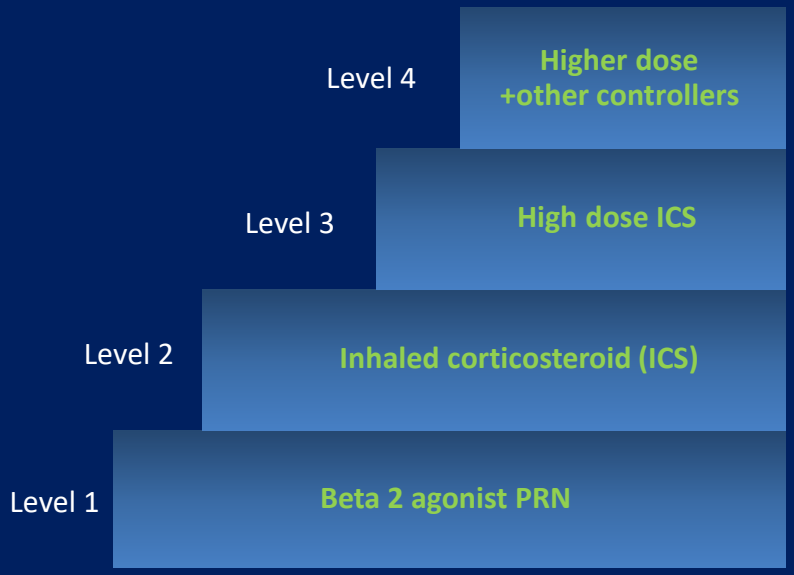
**Opinion-based guidelines**

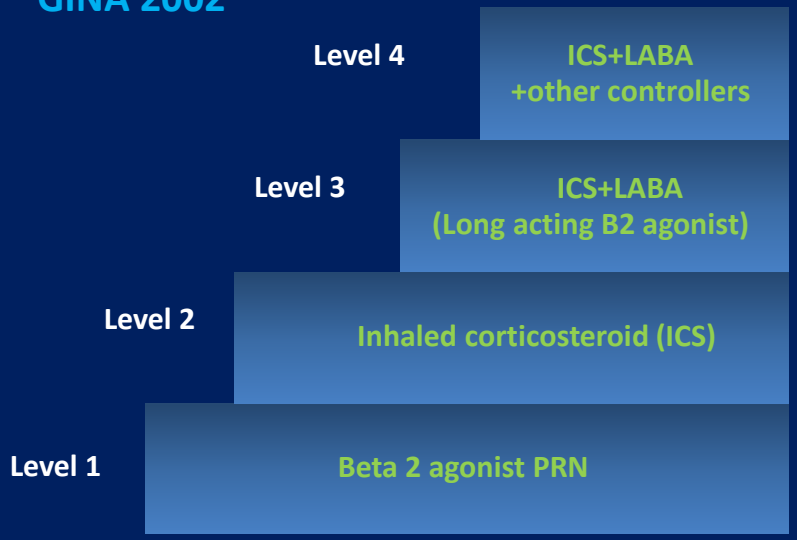

**Evidence-based guideline**
**2002-Present**

1980 1985 1990 1995 2000 2005 2010 2015.....2019

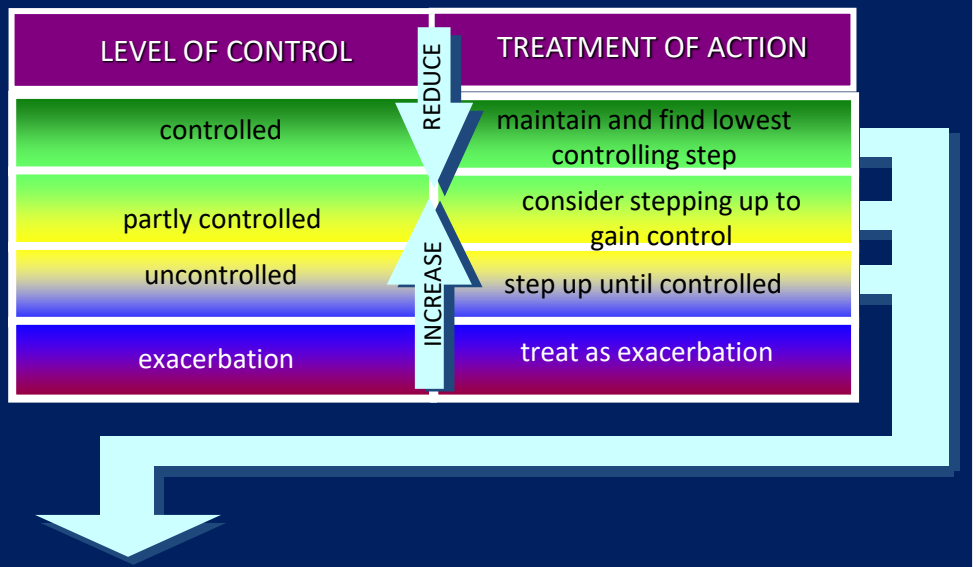
## GINA 1995

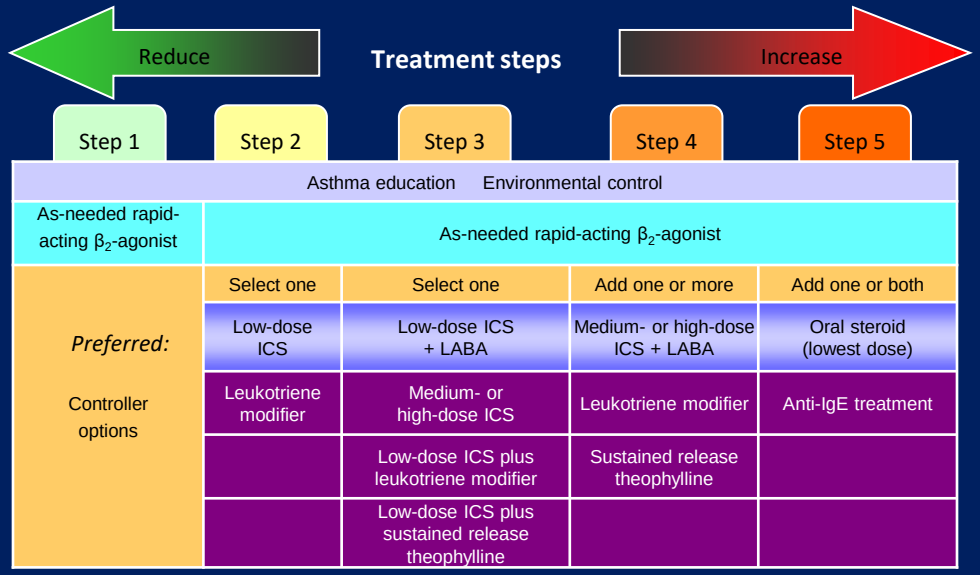



## GINA 2002




## GINA 2006



# Classification of Severity

| CLASSIFY SEVERITY<br>Clinical Features Before Treatment | Symptoms | Nocturnal Symptoms | $FEV_1$ or PEF |
|---|---|---|---|
| STEP 4<br>Severe Persistent | Continuous<br>Limited physical activity | Frequent | ≤ 60% predicted<br>Variability > 30% |
| STEP 3<br>Moderate Persistent | Daily<br>Attacks affect activity | > 1 time week | 60 - 80% predicted<br>Variability > 30% |
| STEP 2<br>**Mild Persistent** | > 1 time a week but < 1 time a day | > 2 times a month | ≥ 80% predicted<br>Variability 20 - 30% |
| STEP 1<br>**Intermittent** | < 1 time a week<br>Asymptomatic and normal PEF btw attacks | > 2 times a month | ≥ 80% predicted<br>Variability < 20% |

The presence of one feature of severity is sufficient to place patient in that category.

GINA 2003

# GINA asthma symptom control

(Exclude $FEV_1$ from control assessment)

**Asthma symptoms control**

| WC | PC | UC |
|---|---|---|

**In the past 4 weeks, has the patient had :**

- Daytime asthma symptoms (>2/wk) Yes ☐ No ☐
- Any night awakening due to asthma Yes ☐ No ☐
- **Reliver (SABA)** for symptoms (>2 /wk) Yes ☐ No ☐
- Any activity limitation due to asthma Yes ☐ No ☐

| None of these | 1-2 of these | 3-4 of these |
|---|---|---|

* WC= well controlled, PC= Partly controlled and UC =Uncontrolled asthma

Global Strategies for Asthma Management and Prevention GINA report 2021

# Future risk factor of poor outcome

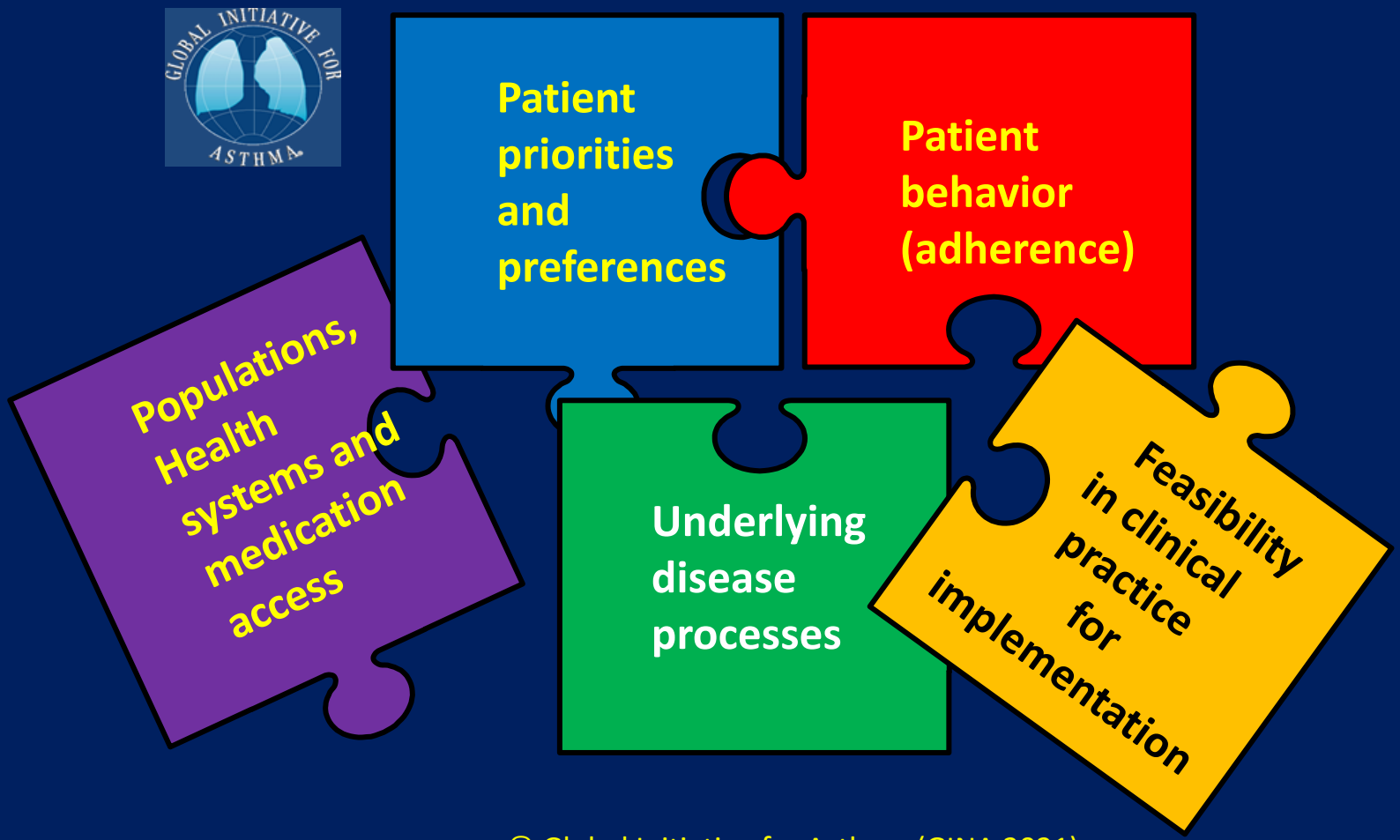
**Poor asthma outcome**

| Risk factors of exacerbation | Risk factors for developing fixed AO | Risk factors of medication side effect |
|---|---|---|
| • **Uncontrolled symptoms**<br>• **Inadequate ICS**<br>• **High SABA use (≥3 canisters/yr)** | • No ICS treatment | • **Frequent oral steroids**<br>• **High dose/potent ICS**<br>• **P450 inhibitors** |
| • ≥1 exacerbation in last 12 mo<br>• Low $FEV_1$; high BD reversibility<br>• Incorrect inhaler technique and/or poor adherence<br>• Smoking<br>• Obesity, chronic rhinosinusitis,<br>• pregnancy<br>• Blood eosinophilia<br>• Elevated FeNO in adults with allergic asthma taking ICS<br>• Ever intubated for asthma | • Smoking<br>• Occupational exposure<br>• Mucus hypersecretion blood eosinophilia<br>• Pre-term birth, low BW | |

Global Strategies for Asthma Management and Prevention GINA report

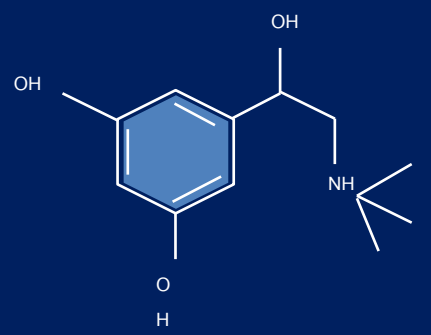
# GINA 2021

## Selection of asthma treatment options



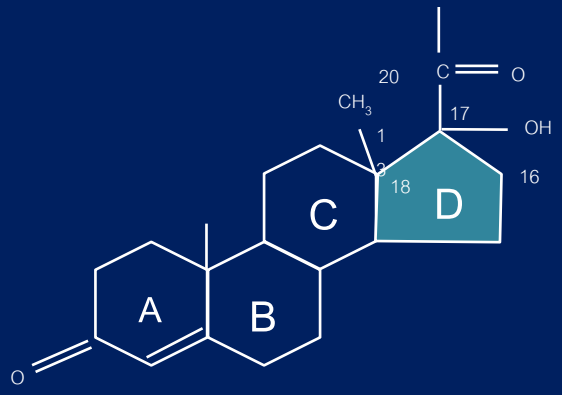
# Asthma pharmacology
## Treatment options in GINA 2021

### Airflow obstruction



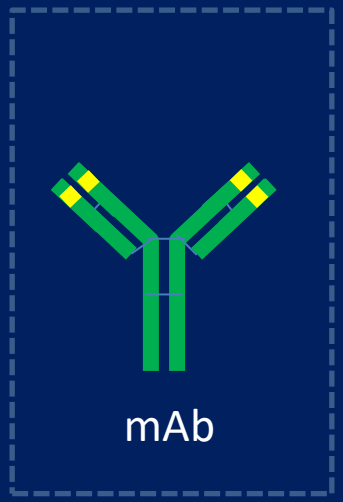

**Bronchodilators**

### Airway inflammation




**Anti-inflammatory**

### Targeted therapy




**Monoclonal Ab**

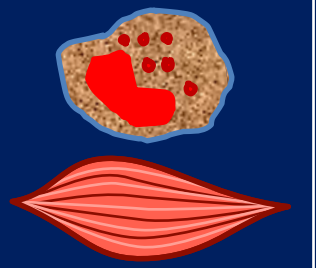
# Persistent use of SABA in asthma

## Real world situation

### Education & information

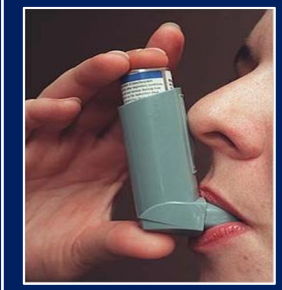
- ✓ Asthma = disease of bronchospasm
- ✓ Asthma = disease of airway inflammation



### Patient satisfaction on SABA & reliance

- ✓ **Rapid** symptoms relieve
- ✓ Prominence in ED-ICU care
- ✓ **Low cost**





### Patient believe in SABA

- ✓ Asthma reliver provides asthma control
- ✓ Asthma controller takes time **(no benefit)**


## Steroid phobia and ignorance & SABA addiction

# Regular use of SABA vs. Higher use of SABA
## Adverse effect on asthma

### Decreased broncho-protection

- β-receptor downregulation
- Rebound AHR
- ↓ bronchodilator response
- ↑ allergic response
- ↑ eosinophilic inflammation

### Adverse clinical outcome

- Dispensing of ≥3 canisters per year (≈ 1.7 puffs/d) is associated with ↑of ER visits
- Dispensing of ≥12 canisters per year is associated with higher risk of death

Hancox. Respir Med. 2000 ;94(8):767-71.
Aldridge. Am J Respir Crit Care Med. 2000 ;161(5):1459-64.

Stanford, Ann Allergy Asthma Immunol. 2012;109(6):403-7
Suissa. Am J Respir Crit Care Med. 1994;149(3 Pt 1):604-10.

# Benefits of ICS and non-formoterol LABA in asthma

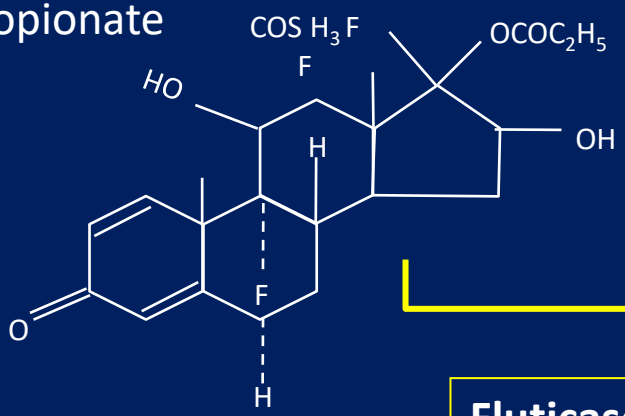
**Airway inflammation**

**Smooth muscle dysfunction**

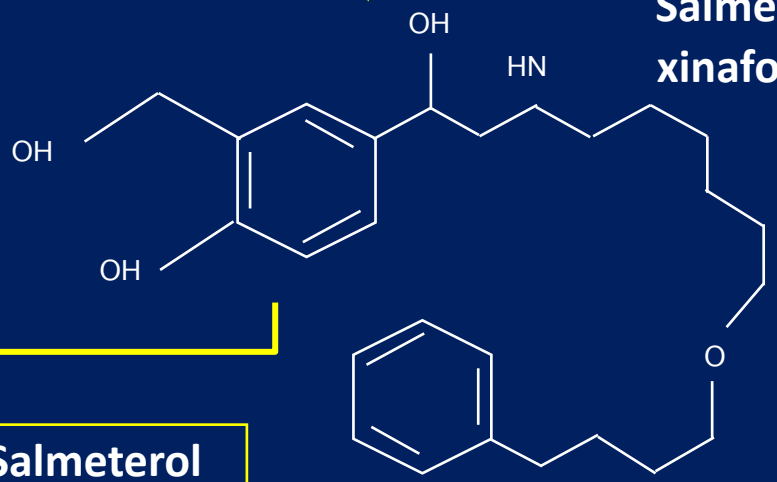
**ICS**

**LABA**

Fluticasone propionate




**Salmeterol xinafoate**




| | |
|---|---|
| **Fluticasone propionate** | **Salmeterol xinafoate** |
| **Fluticasone propionate** | **Vilanterol trifenatate** |
| **Fluticasone propionate** | **Formoterol fumarate** |

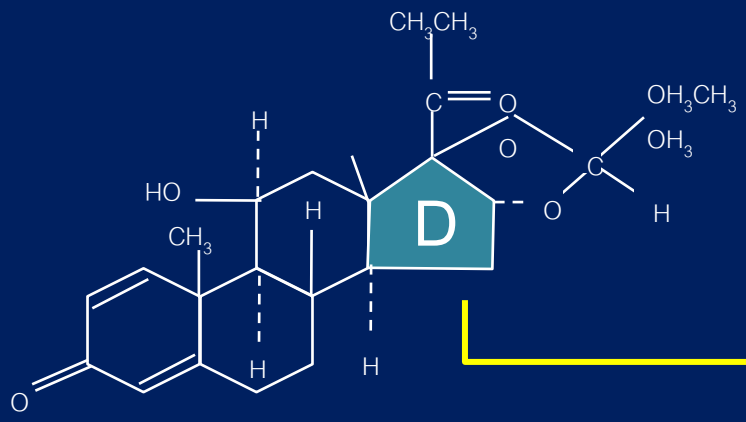
# Benefits of ICS and formoterol LABA in asthma

**Airway inflammation**

**Smooth muscle dysfunction**

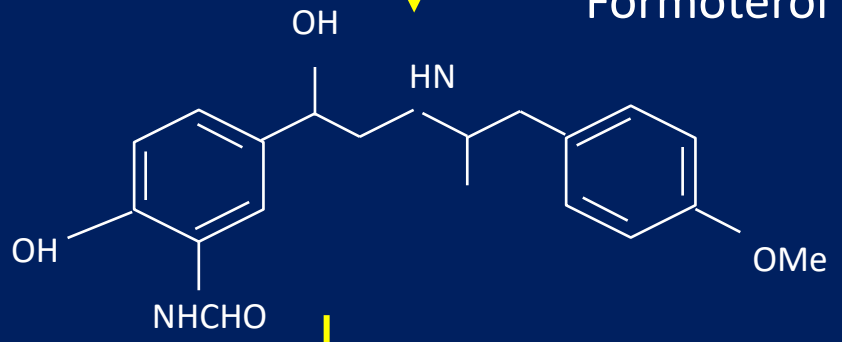
**ICS**

Budesonide




**LABA**

Formoterol




**Budesonide (BUD)**

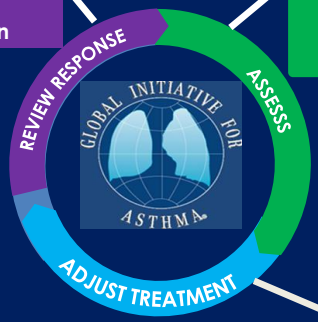
**Beclomethasone dipropionate (BDP)**

**Formoterol fumarate**

**Formoterol fumarate**

# Adults & adolescents 12+ years






- Symptoms
- Exacerbations
- Adverse events
- Lung function
- Patient satisfaction

- Confirmation of Diagnosis
- Symptom control and risk factors (including lung function)
- Comorbidities
- Inhaler technique & adherence
- Patient goal and preference

- Asthma medications (adjust up & down)
- Non-pharmacological strategies
- Education & skill training
- Treat modifiable risk factors

| | STEP 1 | STEP 2 | STEP 3 | STEP 4 | STEP 5 |
|---|---|---|---|---|---|
| **PREFERRED CONTROLLER** to prevent exacerbations and control symptoms | As-needed low dose ICS-formoterol * | Daily low dose ICS) OR As-needed low dose ICS-formoterol * | Low dose ICS-LABA | Medium dose ICS-LABA | High dose ICS-LABA |
| **Other controller options** | Low dose ICS taken whenever SABA is taken † | Leukotriene receptor antagonist (LTRA) OR low dose ICS taken whenever SABA taken † | Medium dose ICS, or low dose ICS+LTRA # | High dose ICS, add-on tiotropium, OR add-on LTRA # | Refer for phenotypic assessment ± add-on therapy, e.g.tiotropium, anti-IgE, anti-IL5/5R, anti-IL4R |
| | | | | | Add low dose OCS, but consider side-effects |
| **PREFERRED RELIEVER** | As-needed low dose ICS-formoterol * | | As-needed low dose ICS-formoterol ‡ | | |
| **Other reliever option** | As-needed short-acting $\beta_2$ -agonist (SABA) | | | | |

* Off-label; data only with Budesonide-formoterol

† Off-label; separate or combination ICS and SABA inhalers

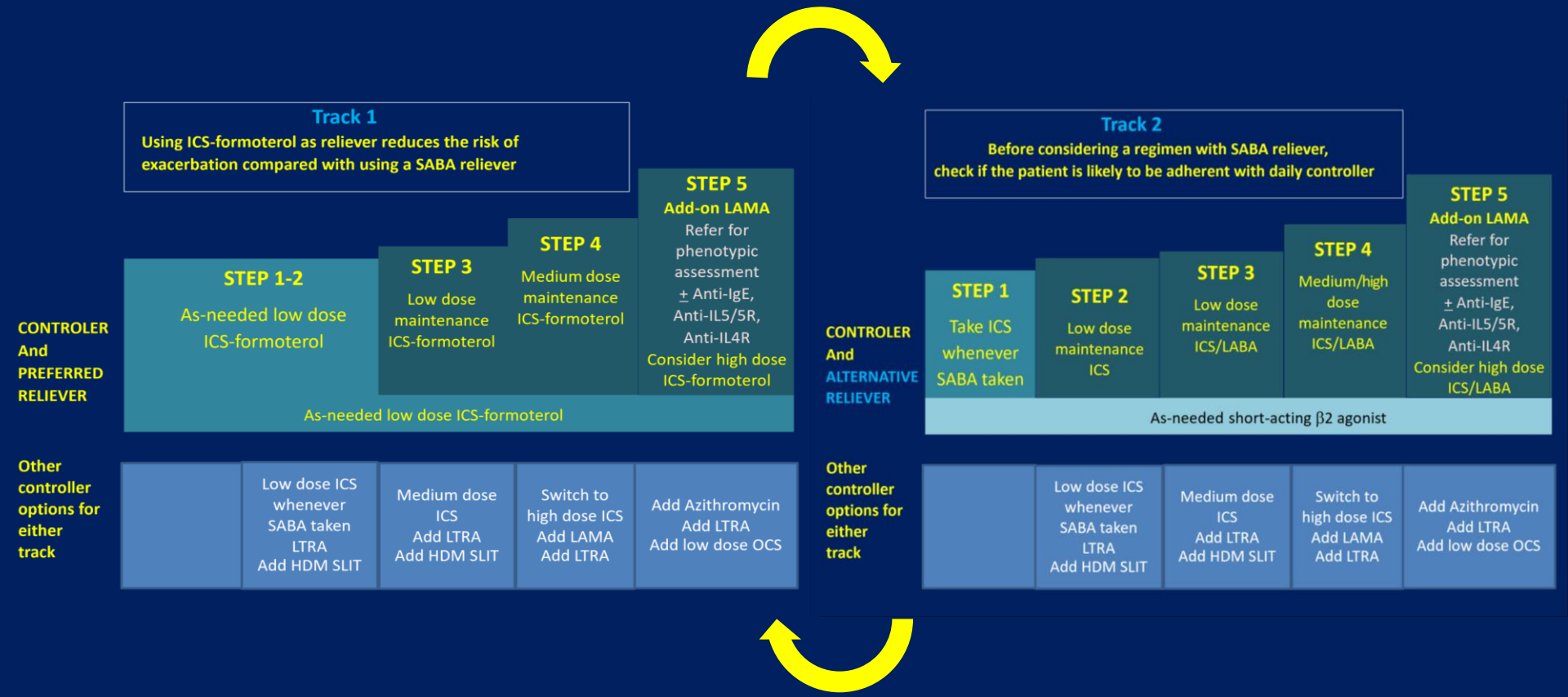
‡ Low-dose ICS-form is the reliever for patients prescribed BUD-form or BDP-form maintenance and reliever therapy

# Consider adding HDM SLIT for sensitized patients with allergic rhinitis and FEV >70% predicted

# Treatment may be

## Stepped up/down within a track using the same reliever at each step OR Switched between tracks

## According to the patient's needs and preferences

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# Asthma controllers & relievers in adults & adolescents 12+ years

## Track 1

**Using ICS-formoterol as reliever reduces the risk of exacerbation compared with using a SABA reliever**

**CONTROLER And PREFERRED RELIEVER**

**STEP 1-2**

As-needed low dose ICS-formoterol

**STEP 3**

Low dose maintenance ICS-formoterol

**STEP 4**

Medium dose maintenance ICS-formoterol

**STEP 5**

**Add-on LAMA**

Refer for phenotypic assessment

± Anti-IgE, Anti-IL5/5R, Anti-IL4R

Consider high dose ICS-formoterol

As-needed low dose ICS-formoterol

**Other controller options for either track**

| | | | | |
|---|---|---|---|---|
| | Low dose ICS whenever SABA taken<br>LTRA<br>Add HDM SLIT | Medium dose ICS<br>Add LTRA<br>Add HDM SLIT | Switch to high dose ICS<br>Add LAMA<br>Add LTRA | Add Azithromycin<br>Add LTRA<br>Add low dose OCS |

# Asthma controllers & relievers in adults & adolescents 12+ years

**Track 2**

**Before considering a regimen with SABA reliever, check if the patient is likely to be adherent with daily controller**

| | STEP 1 | STEP 2 | STEP 3 | STEP 4 | STEP 5 |
|---|---|---|---|---|---|
| **CONTROLER And ALTERNATIVE RELIEVER** | Take ICS whenever SABA taken | Low dose maintenance ICS | Low dose maintenance ICS/LABA | Medium/high dose maintenance ICS/LABA | **Add-on LAMA** Refer for phenotypic assessment ± Anti-IgE, Anti-IL5/5R, Anti-IL4R Consider high dose ICS/LABA |
| | As-needed short-acting β2 agonist | | | | |
| **Other controller options for either track** | | Low dose ICS whenever SABA taken<br>LTRA<br>Add HDM SLIT | Medium dose ICS<br>Add LTRA<br>Add HDM SLIT | Switch to high dose ICS<br>Add LAMA<br>Add LTRA | Add Azithromycin<br>Add LTRA<br>Add low dose OCS |

# GINA treatment figure now shows two tracks

## With the two reliever choices across asthma severity

## Based on evidence about outcomes

### Track 1

**(the preferred approach)**
**with low dose ICS-formoterol**
**as the reliever**

Using **ICS-formoterol as reliever** reduces the risk of exacerbations compared with using a **SABA reliever**

### Track 2

**(an alternative approach)**
**with SABA**
**as the reliever**

if Track 1 is not **possible**
or is **not preferred** by a patient
with **no exacerbations** on their current controller therapy

Patient is likely to be **adherent**
with **daily controller**

**ICS-formoterol as reliever** VS. **SABA reliever**
- Similar symptom control
- Similar lung function

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# GINA treatment figure now shows two tracks

## With the two reliever choices across asthma severity

## Based on evidence about outcomes

### Track 1

**(the preferred approach)**

**with low dose ICS-formoterol as the reliever**

At any treatment step has asthma symptoms, patients use low dose **ICS-formoterol** for symptom relief

In Steps 3–5, patients take **ICS-formoterol** as **daily controller treatment** (maintenance and reliever therapy-MART)

### Track 2

**(an alternative approach)**

**with SABA as the reliever**

Patient takes a **SABA and low dose ICS together** for symptom relief

*ICS taken right after the SABA*

In Steps 2–5, patient takes **ICS-containing controller med** regularly every day

Patients uses **SABA (alone)** for symptom relief

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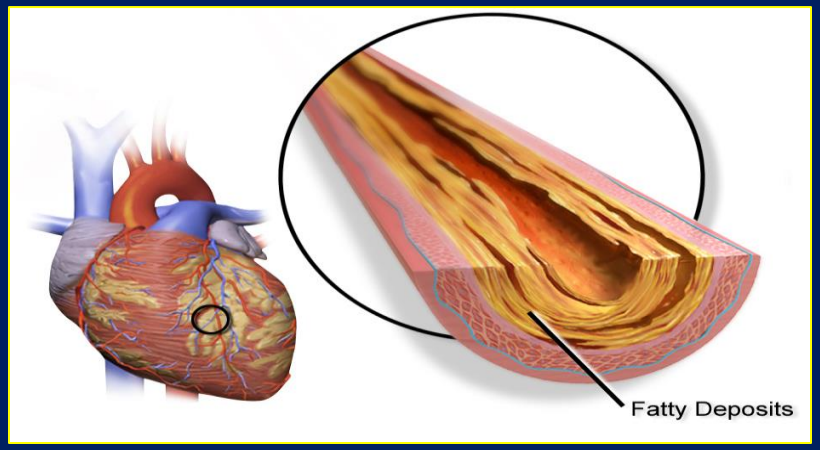
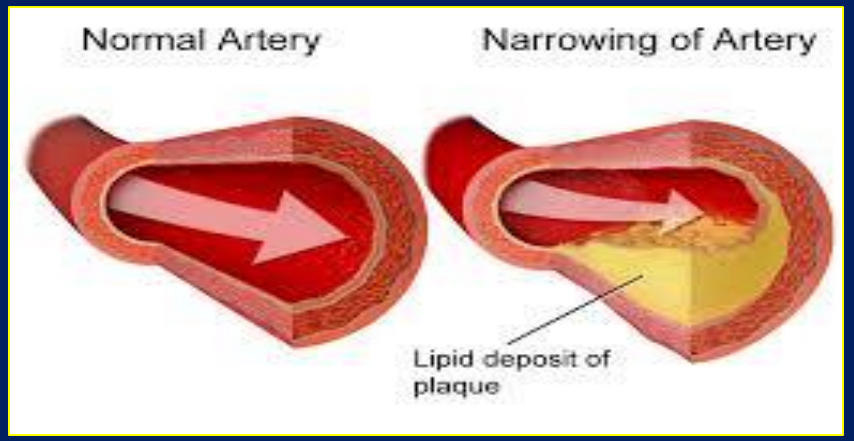
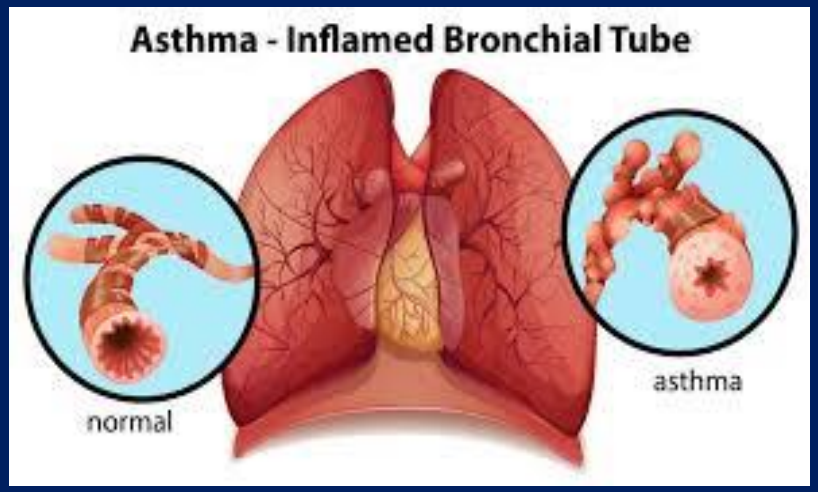
## Bronchospasm in asthma and coronary stenosis in ischemic heart disease

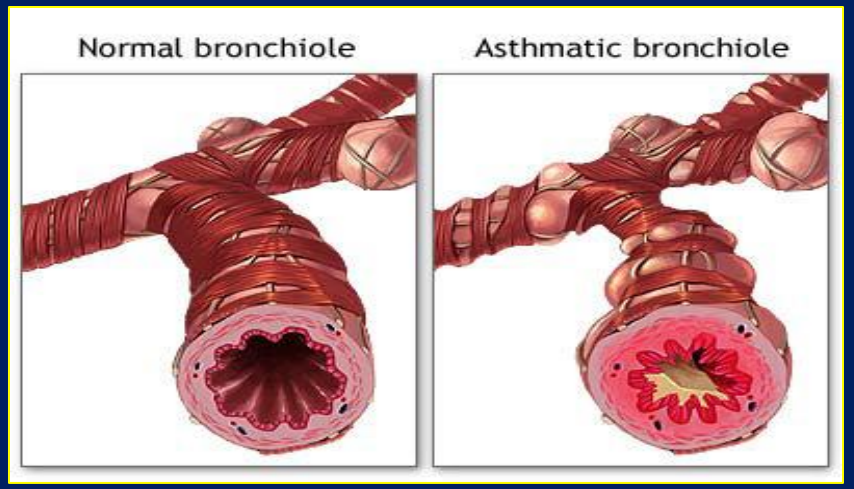
**Bronchodilator SABA vs. Vasodilator-Nitrate**

**Anti platelet for plaque rupture vs. ICS for airway inflammation**



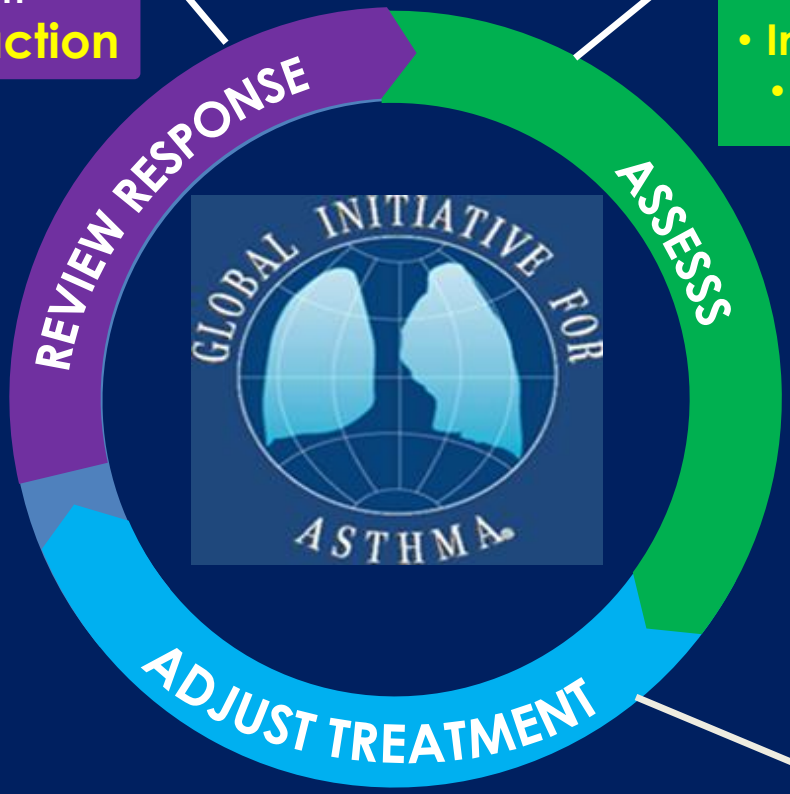



# Asthma treatment track for adults and adolescents
## Track 1 and Track 2

| Features | GINA Track 1 | GINA Track 2 |
|---|---|---|
| Controller | Maintenance ICS/formoterol | ICS or ICS/LABA |
| Reliever for asthma symptoms at any step |  As needed ICS/formoterol<br>Single inhaler for symptoms |  SABA<br>ICS taken right after SABA |
| Patient profiles & Conditions for use | Patient is likely to be poorly adherent with daily ICS | - Patient is likely to adhere to daily ICS containing regimens & SABA<br>- No exacerbation on current Rx<br>- unavailable drug in track 1<br>- not preferred by patient |
| Benefits and drawbacks of track | -ICS/form better reduced risk of exacerbation than SABA reliever<br>- Max as-needed ICS/formoterol dose $\leq$ 72 μg/day<br>- Rinsing mouth after use<br>- Pre-exercise<br>- Beclomethasone/FORM???? | Higher dose of ICS for step up<br>Severe asthma (high dose ICS) |

# Personalized asthma management




- Symptoms
- **Exacerbations**
- Adverse events
- Lung function
- **Patient satisfaction**

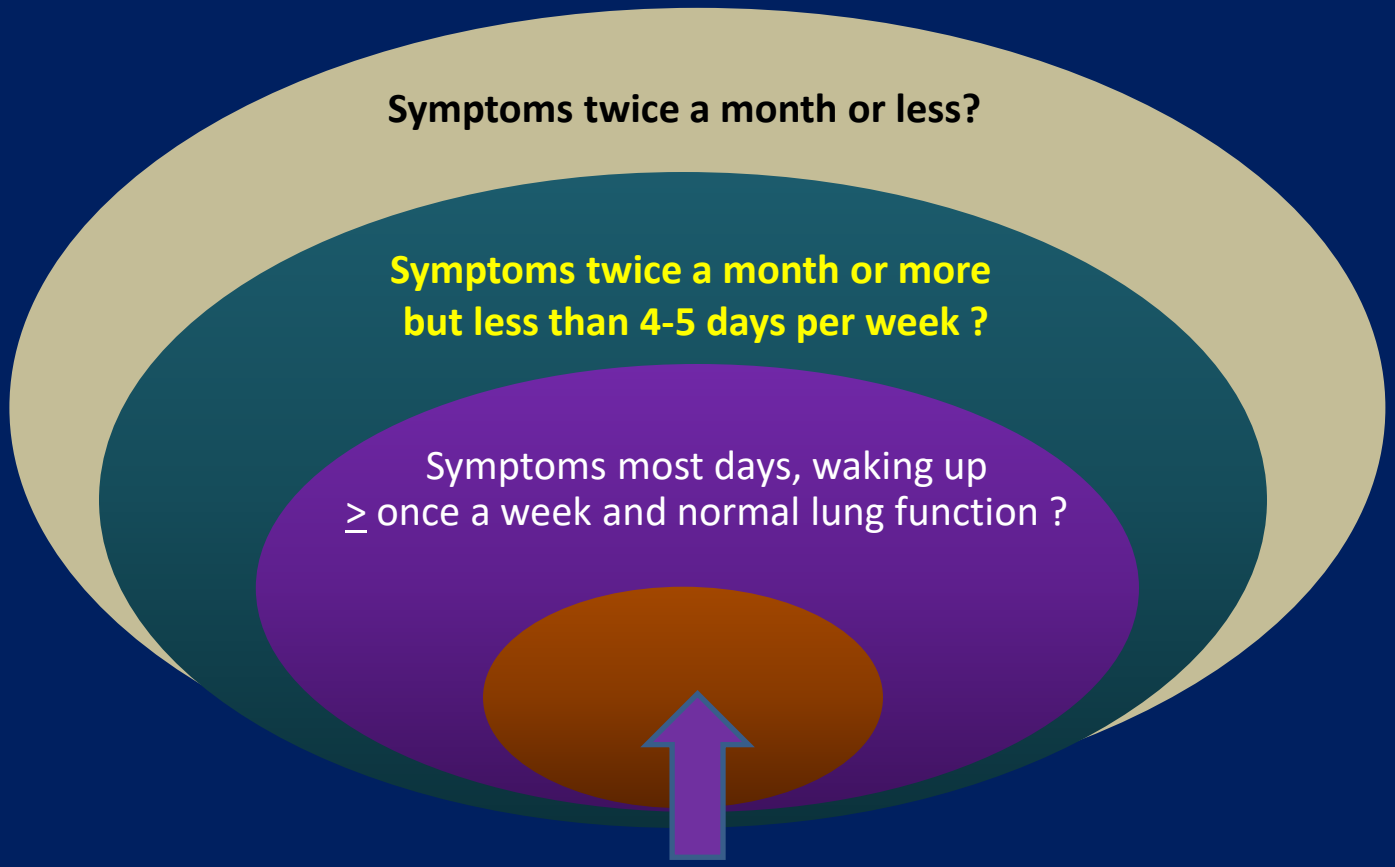
- Confirmation of Diagnosis
- Symptom control and risk factors (including lung function)
- Comorbidities
- **Inhaler technique & adherence**
- **Patient goal and preference**

- **Asthma medications (adjust up & down) between tracts**
- Non-pharmacological strategies
- **Education & skill training**
- Treat modifiable risk factors

**NOT just about medications, NOT one-size-fits-all**

# Asthma severity

## Driven by symptoms and lung function

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# Starting treatment in adults & adolescents with diagnosis of asthma

Confirmation of diagnosis

Symptom control & modifiable risk factors (PFT)

Comorbidities

Inhaler technique & adherence

Patient preference & goal

Symptoms less than 4-5 days a week

**Symptoms most days, or waking once a week or more**

Symptoms most days, or waking once a week or more and low PFT

Start OCS course for patients with severely uncontrolled asthma

**Track 1**
**CONTROLER And PREFERRED RELIEVER**

**STEP 1-2**

As-needed low dose ICS-formoterol

**STEP 3**

Low dose maintenance ICS-formoterol

**STEP 4**

Medium dose maintenance ICS-formoterol

**STEP 5**

**Add-on LAMA**

Refer for phenotypic assessment

± Anti-IgE, Anti-IL5/5R, Anti-IL4R

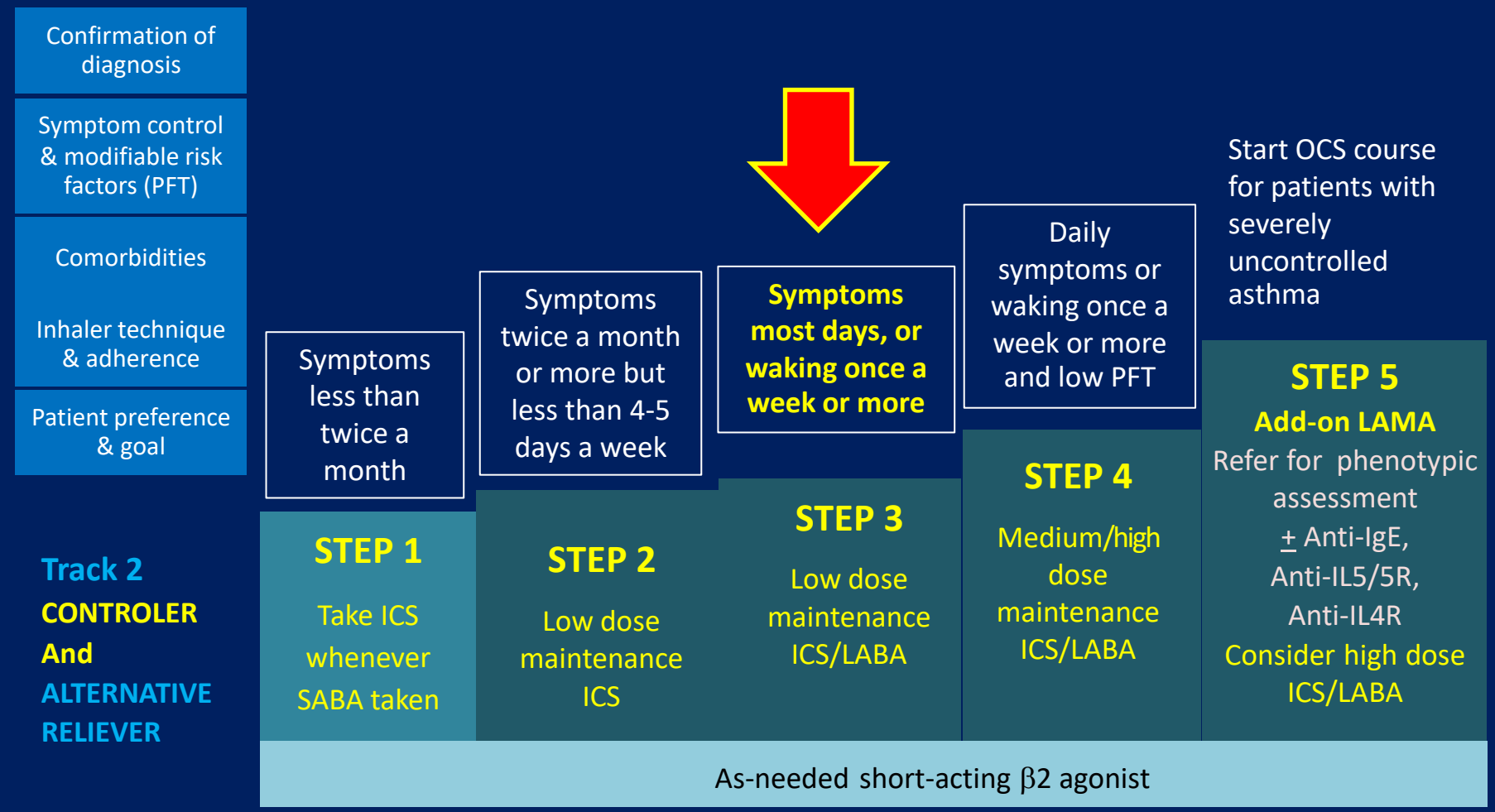
Consider high dose ICS-formoterol

As-needed low dose ICS-formoterol

- Track 1 is preferred if the patient is likely to be poorly adherent with daily controller

- ICS containing therapy is recommend even if symptoms are infrequent (it reduces risk of severe exacerbation and need for OCS)

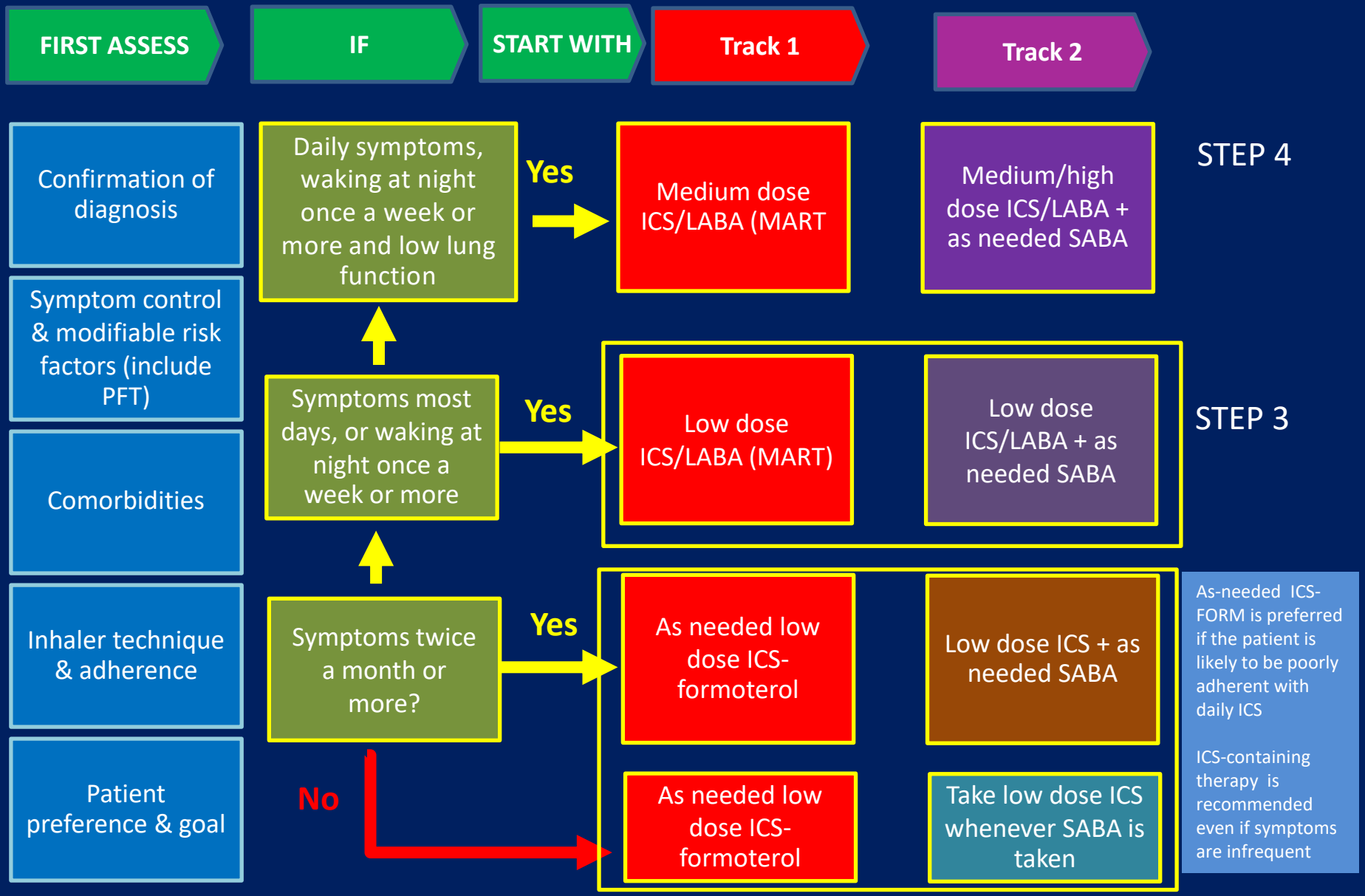
# Asthma controllers & relievers in adults & adolescents 12+ years




- **Track 2 before considering a regimen with SABA reliever check if the patient is likely to be adherent with daily controller**
- ICS containing therapy is recommend even if symptoms are infrequent (it reduces risk of severe exacerbation and need for OCS)

| Features for selection initial treatment Frequency of symptoms | Track 1 (Drug available and patient preference) | Track 2 (Likely adherence to daily treatment) |
|---|---|---|
| Symptoms less than twice a month AND no risk or exacerbation | As needed low dose ICS/formoterol (Evidence B) | Low dose ICS taken whenever SABA taken (Separate/same device) (Evidence B) |
| Symptoms or need of reliever twice a month or more | As needed low dose ICS/formoterol (Evidence A) | Low dose ICS with as-needed SABA (Evidence A) |
| Symptoms most day OR waking once a week OR risk factor exist | Low dose ICS/formoterol MART (Evidence A) | Regular Low dose ICS/LABA with as-needed SABA (Evidence A) OR Medium dose ICS (Evidence A) |
| Initial with severe uncontrolled asthma OR exacerbation | Medium dose ICS/formoterol MART (Evidence D) ± OCS | Medium dose ICS/LABA with as-needed SABA (Evidence D) OR High dose ICS (Evidence A) ± OCS |

# Suggested controller treatment for adults and adolescents with diagnosed asthma

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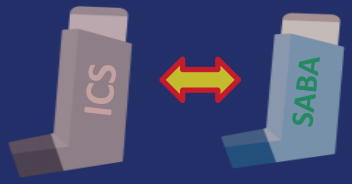
**Track 1**
**CONTROLER**
**And**
**PREFERRED**
**RELIEVER**

**Track 2**
**CONTROLER**
**And**
**ALTERNATIVE**
**RELIEVER**

## Anti-Inflammatory Reliever Therapy (AIRT)

## Maintenance and Reliever Therapy (MART)

## Mild asthma (symptoms <2/m without risk factors)




## Persistent asthma (symptoms ≥ 2/month)



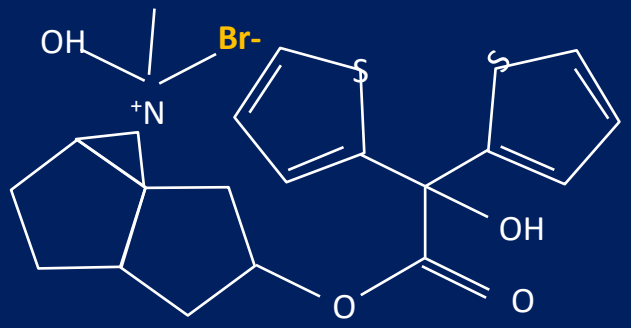
## ICS/FORM vs. salbutamol as reliever (for infrequent symptoms)

# Added-on therapy in GINA 2021 step 4-5

## Bronchodilator vs. Anti-inflammatory drugs

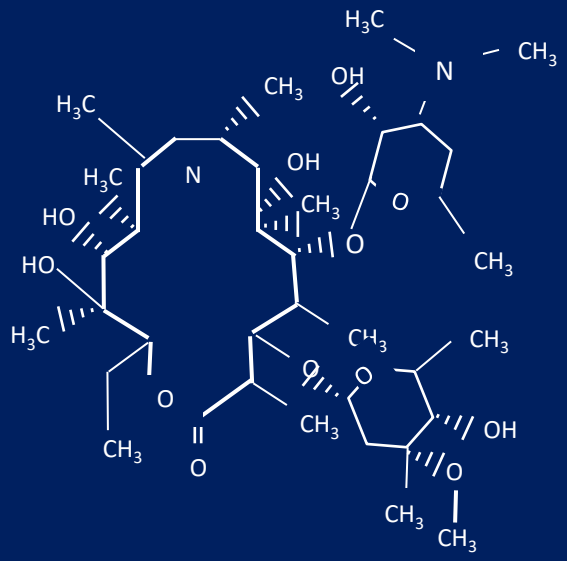
### Long-acting antimuscarinic (LAMA) beyond TIO

Tiotropium bromide




Tiotropium bromide
Umeclidinium bromide
Glycopyrronium bromide

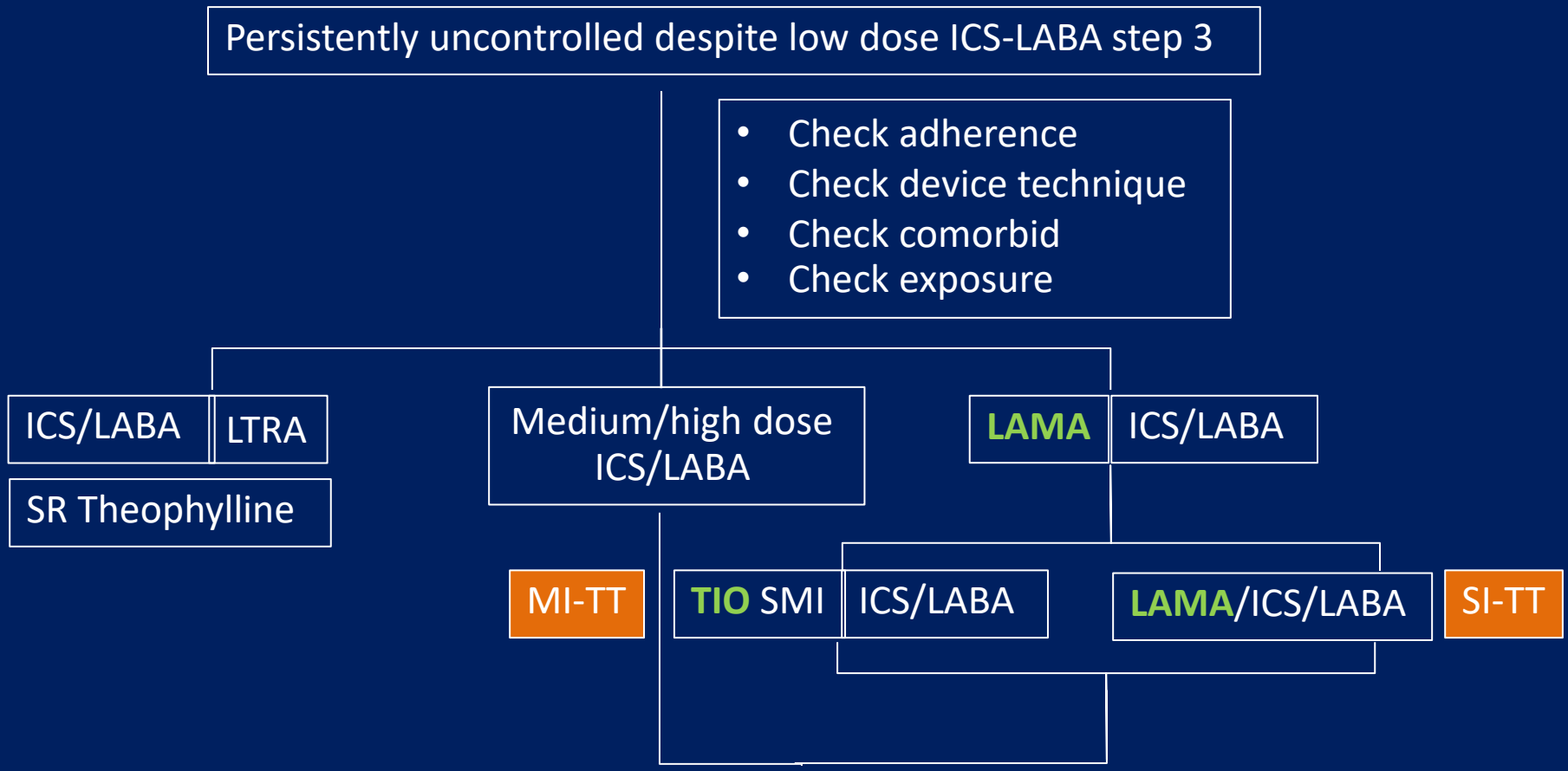
### Macrolides




Clarithromycin
Azithromycin

# LAMA beyond tiotropium in asthma

## GINA step 4-5




Step 5 recommendations; add-on LAMA include combination ICS-LABA-LAMA, if asthma is persistently uncontrolled despite ICS-LABA

# LAMA for add-on ICS/LABA in asthma

## Key concept from GINA 2021

| | | | |
|---|---|---|---|
| MI-TT | **TIO** SMI | ICS/LABA | Add-on tiotropium in separate inhaler (ages ≥6 y) |
| SI-TT | **LAMA**/ICS/LABA | | Triple combinations (ages ≥ 18 y) |

Adding LAMA to medium or high dose ICS-LABA modestly improves lung function (Evidence A) but not symptoms

Add-on LAMA modestly increased the time to severe exacerbation requiring OCS (Evidence B)

Ensure that patient receives sufficient ICS ( > medium dose ICS/LABA, before considering adding a LAMA) for exacerbation

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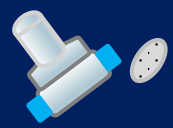
# Single inhaler triple therapy (SI-TT) in asthma

## ICS/LABA/LAMA

| Generic name | Dose (FDC) | Manufacturer | Device |
|---|---|---|---|
| Beclomethasone dipropionate<br>Formoterol fumaratae<br>Glycopyrronium bromide | 100/6/12.5 µg BD<br>87/5/9 µg BD | Chiesi (CHF 5993) TRIMBOW® | pMDI extrafine  |
| Fluticasone furoate<br>Vilanterol trifenatate<br>Umeclidinium bromide | 100/25/62.5 µg OD | GSK TRELEGY® | Ellipta DPI  |
| Mometasone furoate<br>Indacaterol maleate<br>Glycopyrronium bromide | 160/150/50 µg OD | Novartis (QVM149) | Breezhaler DPI  |

Cazzola M et al. *Expert Rev Respir Med*. 2019;13(11):1079-1085

# Long term azithromycin reduces asthma exacerbation

| AZIZAST | AMAZES | AZMATICS |
|---|---|---|
| AZIZAST (24-week).<br>GG Brussel<br>Thorax. 2013;68(4):322-9. | AMAZES (48-week)<br>PG Gibson<br>Lancet. 2017.12;390:659-668 | AZMATICS (12-week)<br>Hahn DL. J Am Board Fam Med.2012:25 (4):442-459. |
| 65% non-EOS (n=70) | | |

**Suggesting to try macrolide (before biologics) even in eosinophilic asthma for reducing exacerbation in at-risk patients**

Eosinophilic asthmatics (sputum Eo $\geq$ 3% **OR** blood Eo $\geq$ 300/μL)
Fewer OCS course for exacerbation
Non-eosinophilic asthmatic (sputum Eo < 3% **OR** blood Eo < 300/μL)
Fewer ATBs for exacerbation
Severe asthmatics: fewer ATBs

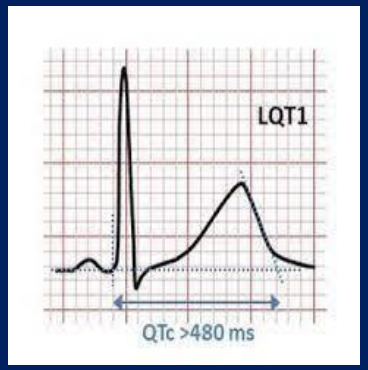
Hiles SA et al. *Eur Respir J* 2019

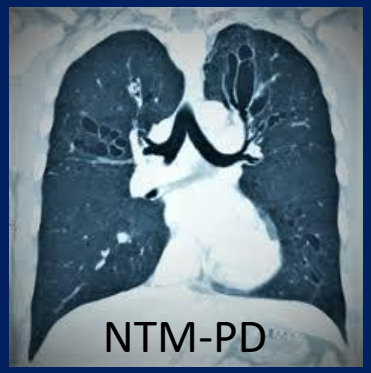
# Azithromycin for add-on ICS/LABA in asthma

## Key concept from GINA 2021

250-500 mg a day 3 times a weekly

**Before considering add-on azithromycin**




Significantly reduces exacerbations in patients taking **high dose ICS-LABA**

Significantly reduces exacerbations in patients with **eosinophilic or non-eosinophilic asthma**

No evidence published for azithromycin in asthma taking medium dose ICS-LABA

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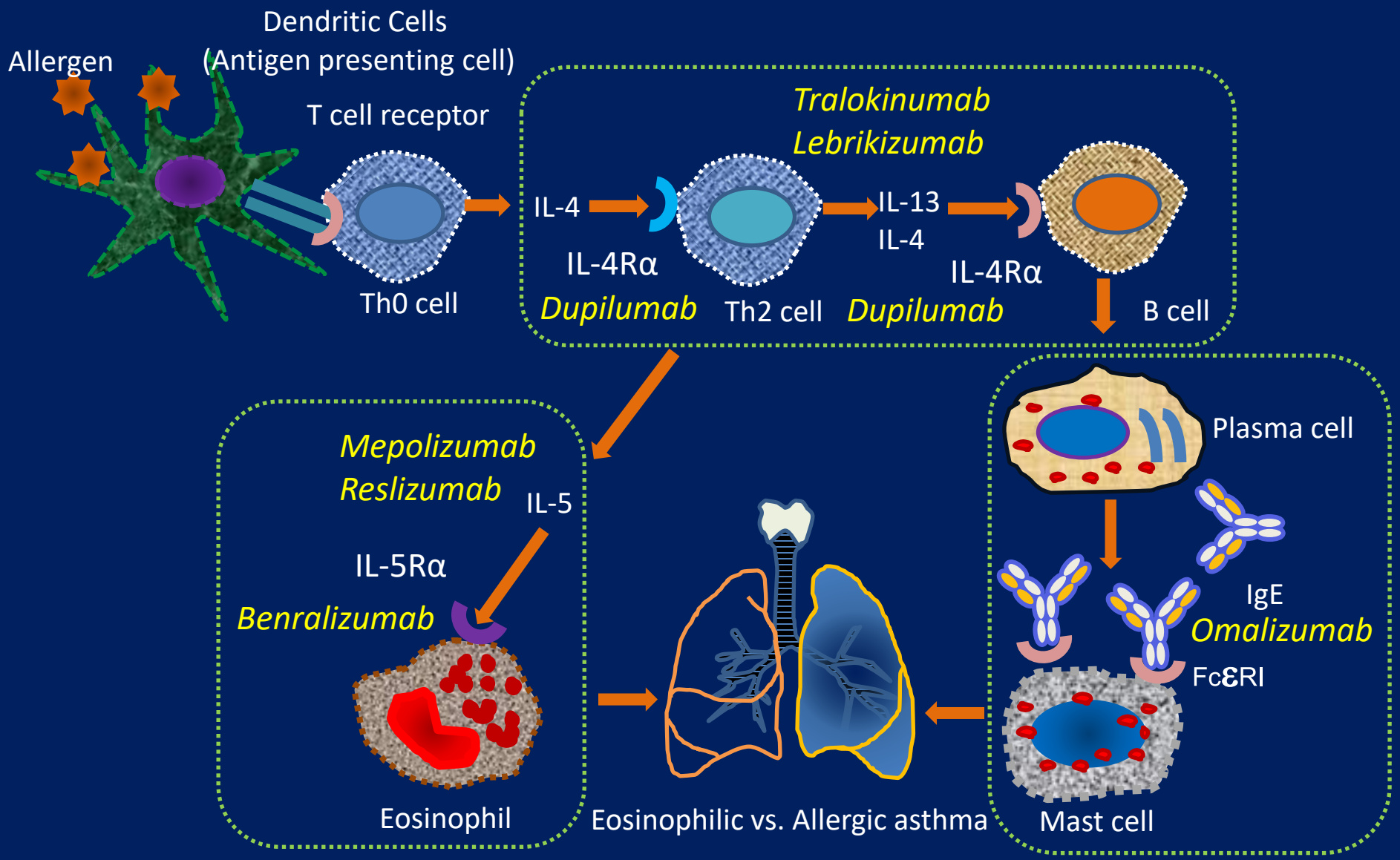
# Targets for biologics

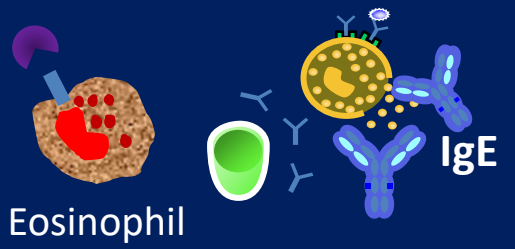
## (Current and pipeline treatments for T2 predominant asthma)

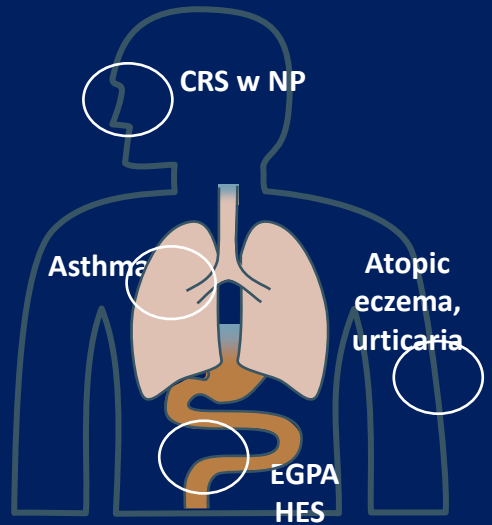


# Additional indications for these therapies in Europe and/or USA

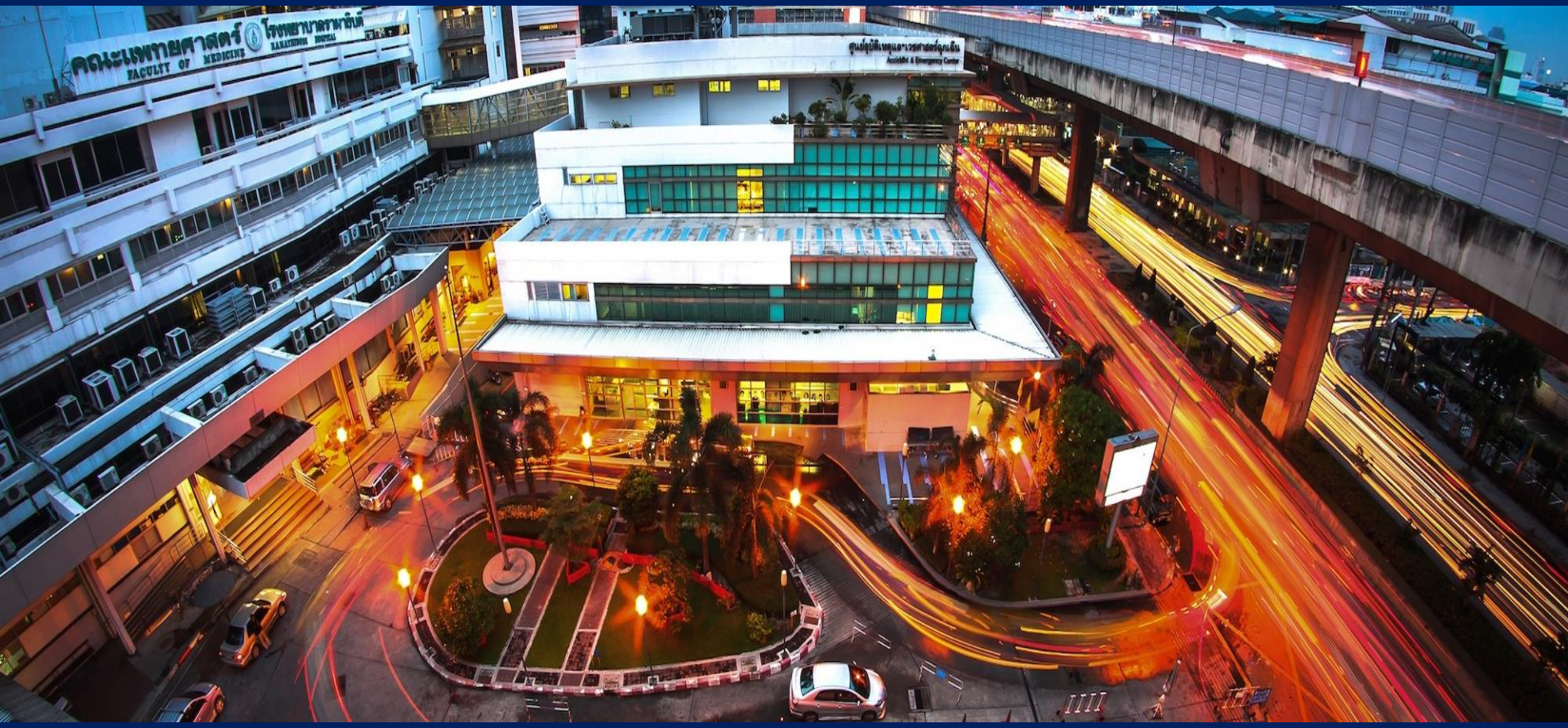
## Type-2 biologics for non-asthmatic indications

- Omalizumab: chronic idiopathic urticaria, nasal polyposis
- Mepolizumab: hyper-eosinophilic syndrome (HES), eosinophilic granulomatosis with polyangiitis (EGPA)
- Benralizumab: no additional indications at present
- **Dupilumab**: chronic rhinosinusitis with nasal polyposis (CRSwNP), atopic dermatitis




Check local regulatory approvals and eligibility criteria




# Thank you for your attention