GINA 2023 Updates and the Future of Asthma Care

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Global Initiative for Asthma (GINA) 2023 Updates and the Future of Asthma Care

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A. It is my obligation to disclose to you that I am was on the **Speakers Bureau for GlaxoSmithKline in 2023**

B. I have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider of commercial services discussed in this activity

C. I **do not** intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.
Our Goal Today:

1. Review 8 most important changes from GINA 2023
2. Discuss how to apply these changes
3. Propose US SMART table
Asthma is not one disease

- Differences in risk factors for development
- Differences in triggers
- Differences in symptoms
- Differences in severity
- Differences in response to therapy
- Differences in effects of comorbid conditions
Asthma is a Big Deal

• Asthma is most common chronic disease of childhood in U.S.¹

• 6.2% of children under age 18 years currently have asthma (2022)²

• 50% of children with asthma have uncontrolled asthma²

• Children with poorly controlled asthma have 2X annual costs for their disease compared with children with well controlled asthma

• Children with severe asthma (5% of asthmatics) account for 50% of asthma health care dollars

• Socioeconomic costs- $56 billion annually²


CDC Asthma Mortality

- Percent of children under age 18 years who currently have asthma: 6.2% (2022)

- In 2019, 44.3% of children ≤ 18 with asthma reported having one or more asthma attacks in the past year

- In 2020, deaths due to asthma rose for the first time in 20 years

- On average, 11 people in the U.S. die from asthma each day

- Black people in the U.S. are nearly 3X more likely to die from asthma than white people in the U.S.

https://www.cdc.gov/asthma/data-visualizations/
Potential Mechanisms Leading To Childhood Asthma

- Genetic polymorphisms
- Prenatal factors
- Allergen exposures
- Exposure to microbial infections
- Vitamin D
- Irritant exposures (tobacco smoke)
- Climate Factors
- Hygiene hypothesis (the micro biome)
- Human behavior, (diet, obesity)
What is GINA?

Global Initiative for Asthma

Celebrating 30 years of working to improve lives of people with asthma

Is a global strategy report based on twice yearly updates of the asthma literature with evidence-based recommendations

What are the key changes for 2023?
2023 First Key Change: Terminology

• **Maintenance** replaces **Controller** - any asthma treatment prescribed for everyday use

• **Reliever** refers to an asthma inhaler used as-needed for quick relief of symptoms (SABAs, ICS-formoterol and ICS-SABA)

• **AIR**-Anti-inflammatory reliever
  - ICS-formoterol, ICS-SABA
  - Provides rapid relief plus a little ICS
  - Reduces risk of exacerbations compared to SABA reliever
  - Can be used before exercise or allergen exposure
  - Steps 1 and 2

• **MART**-Maintenance and reliever therapy
  - refers **only** ICS-formoterol
  - previously called SMART-single-inhaler maintenance and reliever therapy
  - Steps 3-5
MART Therapy

One inhaler

Used as maintenance and reliever

Increase use when sick

Budesonide/formoterol

Mometasone/formoterol

Formoterol

ICS/SABA
GINA 2023 – Adults and adolescents

Track 1

**PREFERRED**

**TRACK 1: PREFERRED CONTROLLER and RELIEVER**

Using ICS-formoterol as the reliever* reduces the risk of exacerbations compared with using a SABA reliever, and is a simpler regimen.

**As-needed-only ICS-formoterol (‘AIR-only’)***

**Maintenance and reliever therapy (MART) with ICS-formoterol**

**STEP 5**

Add-on LAMA
Refer for assessment of phenotype. Consider high dose maintenance ICS-formoterol, ± anti-IgE, anti-IL5/5R, anti-IL4Rα, anti-TSLP

**STEP 4**

Medium dose maintenance ICS-formoterol

**STEP 3**

Low dose maintenance ICS-formoterol*

**STEPS 1 – 2**

As-needed-only low dose ICS-formoterol*

RELIEVER: As-needed low-dose ICS-formoterol*

*An anti-inflammatory reliever (AIR)
GINA TRACK 1 with ICS-formoterol is preferred!

- Step treatment down or up by changing number of maintenance doses
- Dial up doses for increased symptoms
- Avoids confusion about inhaler technique with different devices
- A single medication for both symptom relief and maintenance treatment
- Simplicity of TRACK 1
GINA has the Science for ICS-formoterol

• **Steps 1-2**: significant evidence for ICS-formoterol effectiveness and safety compared with SABA alone, or low dose ICS plus as needed SABA (4 x 12 month studies, n ~ 10,000)
  
  (Crossingham et al. Cochrane 2021)

• **Steps 3-5**: significant evidence for effectiveness and safety of MART versus regimens with as needed SABA (n~30,000)
  
  (Sobieraj et al. JAMA 2018, Cates et al. Cochrane 2013)

• Both ICS and the formoterol contribute to reduction in severe exacerbations. Safety established up to total 12 inhalations in any day in large studies
  
Addition of ICS-SABA for Adults and Adolescents

January 11, 2023

• FDA approved albuterol and budesonide inhalation aerosol for the as-needed treatment or prevention of bronchoconstriction and to reduce the risk of asthma attacks in patients with asthma 18 years of age and older.

• It is the first combination of an inhaled corticosteroid (ICS) and a short-acting beta-agonist to be approved in the U.S.
**Anti-inflammatory reliever (AIR)**

Don’t use **two** kinds of LABAs since clinical evidence for safety and efficacy is lacking.
ICS-SABA vs. SABA

**Maintenance**
ICS-LABA or Medium dose ICS

**Reliever**
ICS-SABA vs SABA alone

**Mandala Study:** Double-blind randomized trial, uncontrolled moderate-severe asthma, hx severe exacerbations randomized to prn ICS-SABA or prn SABA with maintenance meds

- PRN use of 2 puffs budesonide-albuterol (80/90 mcg dose) taken for symptom relief, increased time to first severe exacerbation by 41% compared with as needed 2 puffs 90 mcg albuterol

- No head-to-head comparisons between ICS-LABA/ICS-SABA and MART (ICS-formoterol)

- ICS-SABA not recommended for regular use and use as reliever--2 different inhalers, more complex for patients than TRACK 1

New commentary and continued emphasis on asthma management cycle

**Goals of asthma treatment**
- Few asthma symptoms
- No sleep disturbance
- No exercise limitation
- Maintain normal lung function
- Prevent flare ups
- Prevent asthma deaths
- Minimize medication side effects

**Assess:**
- Symptom control and modifiable risk factors
- Comorbidities
- Inhaler technique and adherence.
- Patient's goals and preferences,

**Adjust:** management based on assessments
- Treatment of modifiable risk factors and comorbidities
- Relevant non-pharmacological strategies
- Adjustment of medication up/down
- Education and skills training

**Review:** the goals of treatment
- Symptoms
- Exacerbations
- Side effects
- Lung function
- Comorbidities
- Patient satisfaction
GINA 2023 - Children 6–11 years

Personalized asthma management:
Assess, Adjust, Review

Symptoms
Exacerbations
Side-effects
Lung function
Comorbidities
Child (and parent/caregiver) satisfaction

Treatment of modifiable risk factors & comorbidities
Non-pharmaceutical strategies
Asthma medications (adjust down or up)
Education & skills training

Asthma medication options:
Adjust treatment up and down for individual child’s needs

**PREFERRED CONTROLLER** to prevent exacerbations and control symptoms

**STEP 1**
Low dose ICS taken whenever SABA taken*

**STEP 2**
Daily low dose inhaled corticosteroid (ICS) (see table of ICS dose ranges for children)

**STEP 3**
Low dose ICS-LABA, OR low dose ICS-formoterol maintenance and reliever (MART). Refer for expert advice

**STEP 4**
Medium dose ICS-LABA, OR low dose ICS-formoterol maintenance and reliever therapy (MART).
Add tiotropium or add LTRA
As last resort, consider add-on low dose OCS, but consider side-effects

**STEP 5**
Refer for phenotypic assessment ± higher dose ICS-LABA or add-on therapy, e.g. anti-IgE, anti-LTRA, anti-IL5

*Anti-inflammatory relievers (AIR)

As-needed SABA or ICS-formoterol reliever* in MART in Steps 3 and 4
Changes in GINA 2023
Difficult to Treat and Severe Asthma

• Double-blind study of withdrawal of mepolizumab in adults with severe eosinophilic asthma found more exacerbations in those who stopped mepolizumab than those who continued treatment.

• Regardless of regulatory approvals, GINA recommends biologic therapy for asthma only if asthma is severe and only if treatment has been optimized.

• Head-to-head studies are needed.

• Non-asthma indications for a biologic therapy are mentioned only if the condition is relevant to asthma management or it is commonly associated with asthma.

• Severe asthma guide published in mid 2023 in large format.
GINA 2023 recommends biological therapy for asthma only if:

Asthma is severe and treatment has been optimized.

<table>
<thead>
<tr>
<th>MOA</th>
<th>omalizumab</th>
<th>dupilumab</th>
<th>mepolizumab</th>
<th>benralizumab</th>
<th>tezepelumab</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>6 years</td>
<td>6 years</td>
<td>6 years</td>
<td>12 years</td>
<td>12 years</td>
</tr>
<tr>
<td>Where</td>
<td>Home or</td>
<td>Home</td>
<td>Home or</td>
<td>Home or</td>
<td>Home or</td>
</tr>
<tr>
<td>administered?</td>
<td>office</td>
<td>office</td>
<td>office</td>
<td>office</td>
<td>office</td>
</tr>
<tr>
<td><strong>How Often?</strong></td>
<td>Every 2 or 4 weeks</td>
<td>6-11yr: Every 2 or 4 weeks 12 yr: Every 2 weeks</td>
<td>Every 4 weeks</td>
<td>Every 8 weeks after a build up phase of every 4 weeks x3</td>
<td>Every 4 weeks</td>
</tr>
<tr>
<td><strong>Forms</strong></td>
<td>Prefilled syringe</td>
<td>Prefilled syringe and pen</td>
<td>Prefilled syringe 6-11yr Prefilled pen ≥12</td>
<td>Prefilled pen home prefilled syringe office</td>
<td>Prefilled pen home prefilled syringe office</td>
</tr>
<tr>
<td>Other</td>
<td>Chronic hives (12yr)</td>
<td>AD (&gt;6 mo)</td>
<td>CRSwNP (18yr)</td>
<td>CRSwNP (18yr)</td>
<td>CRSwNP (18yr)</td>
</tr>
<tr>
<td>conditions</td>
<td>Chronic hives (12yr)</td>
<td>EoE (12yr)</td>
<td>CRSwNP (18yr)</td>
<td>EGPA (18yr)</td>
<td>CRSwNP (18yr)</td>
</tr>
<tr>
<td>Special</td>
<td>anaphylaxis</td>
<td>Live vaccines? When?</td>
<td>Herpes zoster</td>
<td>Live vaccines? When?</td>
<td>Live vaccines? When?</td>
</tr>
<tr>
<td>considerations</td>
<td>anaphylaxis</td>
<td>Live vaccines? When?</td>
<td>Herpes zoster</td>
<td>Live vaccines? When?</td>
<td>Live vaccines? When?</td>
</tr>
</tbody>
</table>
## Treatment in children ≤ 5 years- Step 1 Clarification

<table>
<thead>
<tr>
<th>Preferred controller</th>
<th>Step 1 Insufficient evidence for daily controller</th>
<th>Step 2 Daily low dose ICS</th>
<th>Step 3 Double “low dose” ICS</th>
<th>Step 4 Continue controller and refer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other controller options</td>
<td>Consider intermittent short course ICS at illness onset</td>
<td>Daily LTRA, or intermittent short course ICS at illness onset</td>
<td>Low dose ICS + LTRA; Consider referral</td>
<td>Add LTRA, or increase ICS frequency or add intermittent ICS</td>
</tr>
</tbody>
</table>

### Reliever
- As needed SABA

- All children who experience wheezing episodes should have inhaled SABA for relief of symptoms
- Use of SABA more than 2X week over one month period indicates need for a trial of low dose ICS
- SABAs are generally ineffective for bronchiolitis
## GINA 2023 – Children 5 years and younger

### Personalized asthma management:
Assess, Adjust, Review response

- **Symptoms**
- Exacerbations
- Side-effects
- Risk factors
- Comorbidities
- Parent/caregiver satisfaction

### Asthma medication options:
Adjust treatment up and down for individual child’s needs

#### PREFERRED CONTROLLER CHOICE
**(Insufficient evidence for daily controller)**
- Consider intermittent short course ICS at onset of viral illness
- Daily leukotriene receptor antagonist (LTRA), or intermittent short course of ICS at onset of respiratory illness

#### RELIEVER
**CONSIDER THIS STEP FOR CHILDREN WITH:**
- Infrequent viral wheezing and no or few interval symptoms
- Symptom pattern not consistent with asthma but wheezing episodes requiring SABA occur frequently, e.g. ≥3 per year. Give diagnostic trial for 3 months. Consider specialist referral.
- Symptom pattern consistent with asthma, and asthma symptoms not well-controlled or ≥3 exacerbations per year.

#### STEP 1
Double ‘low dose’ ICS (See Box 6-7)

#### STEP 2
- As-needed short-acting beta-agonist
- Asthma diagnosis, and asthma not well-controlled on low dose ICS
- Asthma not well-controlled on double ICS

#### STEP 3
- Low dose ICS + LTRA
- Consider specialist referral
- Add LTRA, or increase ICS frequency, or add intermittent ICS

#### STEP 4
Continue controller & refer for specialist assessment

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Box 6-6 © Global Initiative for Asthma, www.ginasthma.org
Reassure patients that ICS-formoterol will work as well as the SABA reliever.

Advise patients to have two inhalers, if possible, 1 home & 1 backpack/bag.

Rinse and spit out after maintenance doses but not needed with reliever doses.

Have a MART action plan.
How many puffs in the US?
<table>
<thead>
<tr>
<th>Step</th>
<th>Age (years)</th>
<th>Medication and device (check patient can use inhaler)</th>
<th>Metered dose (mcg/inhalation)</th>
<th>Delivered dose (mcg/inhalation)</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steps 1–2</strong></td>
<td>6–11</td>
<td>(No evidence)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>12–17</td>
<td>Budesonide-formoterol DPI</td>
<td>200/6</td>
<td>160/4.5</td>
<td>1 inhalation whenever needed</td>
</tr>
<tr>
<td></td>
<td>≥18</td>
<td>Budesonide-formoterol DPI</td>
<td>200/6</td>
<td>160/4.5</td>
<td>1 inhalation whenever needed</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>6–11</td>
<td>Budesonide-formoterol DPI</td>
<td>100/6</td>
<td>80/4.5</td>
<td>1 inhalation once daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td></td>
<td>12–17</td>
<td>Budesonide-formoterol DPI</td>
<td>200/6</td>
<td>160/4.5</td>
<td>1 inhalation once or twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td></td>
<td>≥18</td>
<td>Budesonide-formoterol DPI</td>
<td>200/6</td>
<td>160/4.5</td>
<td>1 inhalation once or twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td></td>
<td>≥18</td>
<td>BDP-formoterol pMDI</td>
<td>100/6</td>
<td>84.6/5.0</td>
<td>1 inhalation once or twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>6–11</td>
<td>Budesonide-formoterol DPI</td>
<td>100/6</td>
<td>80/4.5</td>
<td>1 inhalation twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td></td>
<td>12–17</td>
<td>Budesonide-formoterol DPI</td>
<td>200/6</td>
<td>160/4.5</td>
<td>2 inhalations twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td></td>
<td>≥18</td>
<td>BDP-formoterol pMDI</td>
<td>100/6</td>
<td>84.6/5.0</td>
<td>2 inhalations twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td><strong>Step 5</strong></td>
<td>6–11</td>
<td>(No evidence)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>12–17</td>
<td>Budesonide-formoterol DPI</td>
<td>200/6</td>
<td>160/4.5</td>
<td>2 inhalations twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
<tr>
<td></td>
<td>≥18</td>
<td>BDP-formoterol pMDI</td>
<td>100/6</td>
<td>84.6/5.0</td>
<td>2 inhalations twice daily, PLUS 1 inhalation whenever needed</td>
</tr>
</tbody>
</table>

DPI: dry powder inhaler; pMDI: pressurized metered dose inhaler. For budesonide-formoterol pMDI with 3 mcg [2.25 mcg] formoterol, use double number of puffs.
Budesonide-Formoterol Math Questions?

- Meds are DPI 200/6 and 100/6 in Europe\(^1\)
- **Steps 1-2** are 1 puff prn
  - **Step 3**
    - (6-11yo) 1 puff daily
    - (≥12yo) 1-2 puffs daily
- **Step 4**
  - (6-11yo) 1 puffs bid
  - (≥12yo) 2 puffs bid
- **Step 5**
  - (6-11yo) no evidence
  - (≥12yo) 2 puffs bid

- GINA says for pMDIs containing 3 mcg formoterol (2.25 delivered dose) take 2 inhalations each time
- In US have budesonide-formoterol--- 160/4.5 and 80/4.5
- In US have mometasone-formoterol— 200/5 and 100/5 and 50/5
- **4.5 and 5 are not 6 or 3**
- **US 2020 Focused updates to the Asthma Management Guidelines** The maximum total daily dose of formoterol should not exceed **eight** puffs (36 mcg) for ages 4-11 years and 12 puffs (54 mcg) for ages 12 years and older.

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1. 2023 GINA Main Report - Global Initiative for Asthma - GINA (ginasthma.org)
So how many rescue puffs?

- In **all SMART trials** including 2 studies using pMDIs, as-needed dose has been **one inhalation** of ICS-formoterol.
- pMDIs in the United States are **approved only** for two inhalations per dose to ensure dosing consistency.
- GINA recommended to take one inhalation whenever needed for symptom relief, repeat after a few minutes if needed.
- Smart regimens are not FDA approved for any age group in the US.
- **GINA said** “**There is insufficient data** to assess whether other ICS-formoterol combinations (e.g., mometasone-formoterol pMDI) can be used for SMART.”
- Currently, **GINA advises against** assuming that results obtained with budesonide-formoterol and beclometasone-formoterol combinations will apply to other ICS-formoterol combinations.

Reddel, HK et al. J Allergy Clin Immunol Pract 2022;10:S31-S8
This article includes a writable action plan template that can be modified for other combination ICS-formoterol inhalers, and for as-needed-only ICS-formoterol.

For additional action plans with ICS-formoterol reliever, see National Asthma Council Australia Action plan library:
www.nationalasthma.org.au/health-professionals/asthma-action-plans
## SMART/MART Therapy in US

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Step 1-2 (AIR-Only)</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Maximum daily inhalations</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 12 y old</td>
<td>Budesonide-Formoterol</td>
<td>Maintenance</td>
<td>Reliever</td>
<td>Maintenance</td>
</tr>
<tr>
<td>6-11 y old</td>
<td>160/4.5</td>
<td>1 puff as needed</td>
<td>One puff twice daily or once daily</td>
<td>One puff as needed</td>
</tr>
<tr>
<td>≥ 12 y old</td>
<td>mometasone-formoterol 100/5 mg</td>
<td>1 puff as needed</td>
<td>One puff twice daily or once daily</td>
<td>One puff as needed</td>
</tr>
<tr>
<td>6-11 y old</td>
<td>mometasone-formoterol 50/5 mg</td>
<td>No evidence</td>
<td>One inhalation once daily</td>
<td>One puff as needed</td>
</tr>
</tbody>
</table>
**My Asthma Action Plan**

*For Single Inhaler Maintenance and Reliever Therapy (SMART) with budesonide/formoterol*

<table>
<thead>
<tr>
<th>Normal mode</th>
<th>Asthma Flare-up</th>
<th>Asthma Emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>My SMART Asthma Treatment is:</strong></td>
<td><strong>If over a Period of 2-3 Days:</strong></td>
<td><strong>Signs of an Asthma Emergency:</strong></td>
</tr>
<tr>
<td>- budesonide/formoterol 160/4.5 (12 years or older)</td>
<td>- My asthma symptoms are getting worse OR NOT improving</td>
<td>- Symptoms getting worse quickly</td>
</tr>
<tr>
<td>- budesonide/formoterol 80/4.5 (4-11 years)</td>
<td>- OR</td>
<td>- Extreme difficulty breathing or speaking</td>
</tr>
<tr>
<td><strong>My Regular Treatment Every Day:</strong></td>
<td>- I am using more than 6 budesonide/formoterol reliever inhalations a day (if aged 12 years or older) or more than 4 inhalations a day (if aged 4-11 years)</td>
<td>- Little or no improvement from my budesonide/formoterol reliever inhalations</td>
</tr>
<tr>
<td>(Write in or circle the number of doses prescribed for this patient)</td>
<td><strong>I should:</strong></td>
<td>If I have any of the above danger signs, I should dial for an ambulance and say I am having a severe asthma attack.</td>
</tr>
<tr>
<td>Take [1, 2] inhalation(s) in the morning</td>
<td>- Continue to use my regular everyday treatment PLUS 1 inhalation budesonide/formoterol whenever needed to relieve symptoms</td>
<td><strong>While I am waiting for the ambulance start my asthma first aid plan:</strong></td>
</tr>
<tr>
<td>and [0, 1, 2] inhalation(s) in the evening, every day</td>
<td>- Start a course of prednisolone</td>
<td>- Sit upright and stay calm.</td>
</tr>
<tr>
<td><strong>Reliever</strong></td>
<td>- Contact my doctor</td>
<td>- Take 1 inhalation of budesonide/formoterol. Wait 1-3 minutes. If there is no improvement, take another inhalation of budesonide/formoterol up to a maximum of 6 inhalations on a single occasion.</td>
</tr>
<tr>
<td>Use 1 inhalation of budesonide/formoterol whenever needed to relieve symptoms of my asthma symptoms</td>
<td><strong>Course of Prednisolone Tablets:</strong></td>
<td>- If only albuterol is available, take 4 puffs as often as needed until help arrives.</td>
</tr>
<tr>
<td>I should always carry my budesonide/formoterol inhaler</td>
<td>Take mg prednisolone tablets</td>
<td>- Start a course of prednisolone tablets (as directed) while waiting for the ambulance.</td>
</tr>
<tr>
<td><strong>My asthma is stable if:</strong></td>
<td>per day for days OR</td>
<td>- Even if my symptoms appear to settle quickly, I should see my doctor immediately after a serious attack.</td>
</tr>
<tr>
<td>- I can take part in normal physical activity without asthma symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AND</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- I do not wake up at night or in the morning because of asthma</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Other Instructions**

*Modified from Australian action plan with permission from National Asthma Council Australia and AstraZeneca Australia*
Other changes

- **Pulse oximetry: FDA safety communication**
  - Potential overestimation of oxygen saturation in people with dark skin color

- **Risk of drug interactions between salmeterol or vilanterol and ritonavir-boosted nirmatrelvir (NMV/r)**
  - Risk of cardiovascular adverse effects *(Carr et al, JACI 2023; 151: 809-817)*
  - Drug interaction websites recommend cessation of the LABA for duration of treatment, without warning about risks
  - Options (if available): prescribe alternative antiviral therapy, or switch to ICS or ICS-formoterol for duration of therapy plus 5 days. Remember to teach correct technique if prescribing a new inhaler
  - *(ICS effects unlikely given short duration of treatment)*

- **FeNO-guided treatment**: well-conducted multinational study in children found no reduction in exacerbations *(Turner et al, Lancet Respir Med 2022)*. Update of Cochrane reviews awaited

- **Updated advice about describing asthma severity**
  - Consider using the term ‘apparently mild asthma’ in health professional education: patients with apparently mild asthma can still have severe or fatal asthma exacerbations

- See GINA report for full list of changes
GINA 2023: Other Changes

- Use track 2 for low income countries
- Imaging to evaluate comorbidities/alternate diagnosis
- Consider pertussis in all ages
- ACQ-5 recommended, not ACQ 6 or 7
- Environmental considerations for inhaler choice
- COVID 19 advice - stay on medications
- FENO - limitations as guiding tool; does not predict exacerbations
- Digital interventions
- Nasal and sinus disease
- Pediatric to Adult transitioning
- Fragility fractures
- Non-pharmacologic strategies (e.g. physical activity reduces ED visits)
- Outdoor Air pollution
- Influenza Vaccine Safety
- FENO - limitations as guiding tool; does not predict exacerbations
- Digital interventions
- Nasal and sinus disease
- Pediatric to Adult transitioning
- Fragility fractures
- Non-pharmacologic strategies (e.g. physical activity reduces ED visits)
- Outdoor Air pollution
- Influenza Vaccine Safety
Thank you

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