ADULTS AND ADOLESCENTS: ASTHMA TREATMENT TRACKS

The steps below refer to the recommended asthma treatment options shown in Box 4-6 (p.77). Treatment recommendations for adults and adolescents are shown in two treatment Tracks (Box 4-3), for clarity. Suggested low, medium and high doses for a range of ICS formulations are shown in Box 4-2 (p.71). Medication options and doses for GINA Track 1 are listed in Box 4-8 (p.84). Details about treatment steps for children 6–11 years start on p.94.

Box 4-3. Asthma treatment tracks for adults and adolescents

Asthma treatment for adults and adolescents is in two Tracks

For adults and adolescents, the main treatment figure (Box 4-6, p.77), shows the options for ongoing treatment as two treatment "tracks". The key difference is the medication that is used for symptom relief. In Track 1 (preferred), the reliever is as needed low-dose ICS formoterol, and in Track 2, as-needed SABA or as-needed ICS-SABA.

The reasons for showing treatment in two tracks are:

- to show clinicians how treatment can be stepped up and down using the same reliever at each step
- because ICS-formoterol cannot be used as the reliever in patients prescribed a combination ICS with non-formoterol LABA, due to lack of evidence about efficacy and safety (p.69).[306]

Track 1: The reliever is as-needed low-dose ICS-formoterol

This is the preferred approach recommended by GINA for adults and adolescents, because using low-dose ICS formoterol (an anti-inflammatory reliever [AIR]) reduces the risk of severe exacerbations, compared with regimens that use SABA as reliever, with similar symptom control.

In addition, the treatment regimen is simpler, with patients using a single medication for reliever and for maintenance treatment if prescribed, across treatment steps:

- With this approach, when a patient at any treatment step has asthma symptoms, they use low-dose ICS-formoterol in a single inhaler for symptom relief. In Steps 1–2, this provides their anti-inflammatory therapy.
- In Steps 3–5, patients also take ICS formoterol as their daily maintenance treatment; together, this is called "maintenance-and-reliever therapy" (MART).

Medications and doses for GINA Track 1 are shown in Box 4-8 (p.84).

Track 2: The reliever is as-needed SABA or as-needed ICS-SABA

This is an alternative approach if Track 1 is not possible, or if a patient's asthma is stable with good adherence and no exacerbations on their current therapy. However, before prescribing a regimen with SABA reliever, consider whether the patient is likely to adhere to their maintenance therapy, as poor adherence will increase the risk of exacerbations.

In Step 1, the patient takes a SABA and a low-dose ICS together for symptom relief when symptoms occur (in a combination inhaler, or with the ICS taken immediately after the SABA).

In Steps 2–5, a SABA (alone) or combination ICS-SABA is used for symptom relief, and the patient takes maintenance ICS-containing medication regularly every day. If the reliever and maintenance medication are in different devices, make sure that the patient can use each inhaler correctly.

If changing between steps requires a different inhaler device, train the patient how to use the new inhaler.

Stepping up and down

Treatment can be stepped up or down along one track, using the same reliever at each step, or it can be switched between tracks, according to the individual patient's needs and preferences. Before stepping up, check for common problems such as incorrect inhaler technique, poor adherence, and environmental exposures, and confirm that the symptoms are due to asthma (Box 2-4, p.47).

Additional controller options

The additional controller options, shown below the two treatment tracks, have either limited indications or less evidence for their safety and/or efficacy, compared with the treatments in Tracks 1 and 2.

ICS: inhaled corticosteroid; SABA: short-acting beta$_2$-agonist

INITIAL ASTHMA TREATMENT FOR ADULTS AND ADOLESCENTS

Box 4-4. Initial asthma treatment for adults and adolescents with a diagnosis of asthma

These recommendations are based on evidence, where available, and on consensus.

Presenting symptoms	Preferred INITIAL treatment (Track 1)	Alternative INITIAL treatment (Track 2)
Infrequent asthma symptoms, e.g., 1–2 days/week or less	**As-needed low-dose ICS-formoterol** (Evidence A)	**Low-dose ICS taken whenever SABA is taken**, in combination or separate inhalers (Evidence B). Such patients are highly unlikely to be adherent with daily ICS if prescribed.
Asthma symptoms less than 3–5 days/week, with normal or mildly reduced lung function		**Low-dose ICS (i.e., daily treatment) plus as-needed SABA** (Evidence A). Before choosing this option, consider likely adherence to daily ICS.
Asthma symptoms most days (e.g., 4+ days/week); or waking due to asthma once a week or more, or with reduced lung function. See p.81 for additional considerations.	**Low-dose ICS-formoterol maintenance-and-reliever therapy** (MART) (Evidence A)	**Low-dose ICS-LABA plus as-needed SABA** (Evidence A) or plus as-needed ICS-SABA (Evidence B), **OR** Medium-dose ICS plus as-needed SABA (Evidence A) or plus as-needed ICS-SABA (Evidence B). Consider probability of adherence to daily maintenance treatment.
Daily asthma symptoms or waking at night with asthma once a week or more, and with low lung function or recent exacerbation.	**Medium-dose ICS-formoterol maintenance-and-reliever therapy** (MART) (Evidence D).	**Medium-dose ICS-LABA** (Evidence D) **plus as-needed SABA or plus as-needed ICS-SABA**. Consider probability of adherence to daily maintenance treatment. High-dose ICS plus as-needed SABA is another option (Evidence A) but adherence is worse than with combination ICS-LABA.
Initial asthma presentation is during an acute exacerbation	Treat as for exacerbation (Box 9-4, p.168 and Box 9-6, p172), including short course of OCS if severe; commence medium-dose MART (Evidence D).	Treat as for exacerbation (Box 9-4, p.168 and Box 9-6, p.172), including short course of OCS if severe; commence medium-dose ICS-LABA plus as-needed SABA (Evidence D).

Before starting initial controller treatment

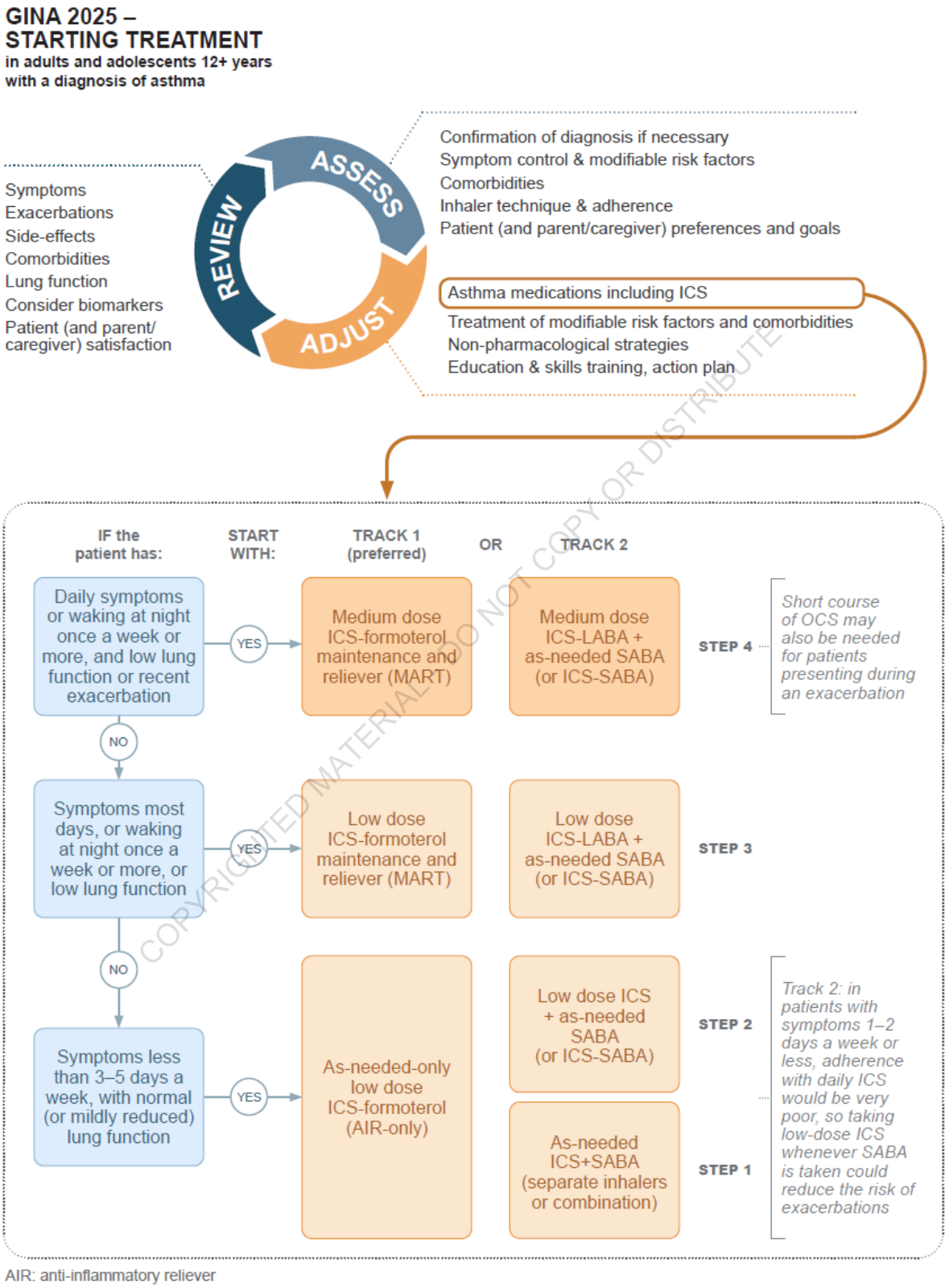
- Record evidence for the diagnosis of asthma.
- Record the patient's level of symptom control and risk factors, including lung function (Box 2-2, p.37).
- Consider factors influencing choice between available treatment options (Box 3-4, p.54), including whether patients likely to adhere to daily ICS-containing treatment, particularly if the reliever is SABA.
- Choose a suitable inhaler (Box 5-1, p.109) and ensure that the patient can use the inhaler correctly. If separate inhalers are needed, try to avoid devices that require different techniques.
- Schedule an appointment for a follow-up visit.

After starting initial controller treatment

- Review patient's response (Box 2-2, p.37) after 2–3 months, or earlier depending on clinical urgency.
- See Box 4-6 (p.77) for recommendations for ongoing treatment and other key management issues.
- Check adherence and inhaler technique frequently.
- Step down treatment once good control has been maintained for 3 months (Box 4-13, p.102).

Also consider cost and probability of adherence to maintenance treatment, and check local eligibility/payer criteria. See Box 4-2 (p.71) for low, medium and high ICS doses, and Box 4-8 (p.84) for Track 1 medications and doses. See list of abbreviations (p.11).

Box 4-5. Flowchart for selecting initial treatment in adults and adolescents with a diagnosis of asthma



AIR: anti-inflammatory reliever

These recommendations are based on evidence, where available, and on consensus. See list of abbreviations (p.11). See Box 4-2 (p.71) for low, medium and high ICS doses for adults and adolescents. See Box 4-6 (p.77), for Track 1 medications and doses. Check local payer criteria.

The Primary Care Management of Asthma

Module A: Assessment and Diagnosis of Asthma

1 **Person** with symptoms and signs compatible with asthma (see **Sidebar A**)

2 Is the patient acutely ill?

Yes → 3 Treat exacerbation → 4 Follow-up as appropriate

No

5 Is there a confident clinical diagnosis of asthma? (see **Sidebar B** and **Appendix C**)

No → 6 Is there an alternative diagnosis?

Yes → 7 Treat alternative diagnosis

No

8 Is the patient capable of spirometry and is it readily available?

Yes → 9 Obtain spirometry

No

10 Is spirometry compatible with asthma (consistent with obstruction)?

Yes

Yes

11 Consider other options according to site availability and patient/provider preferences and characteristics (Refer to **Sidebar C, Sidebar D and Appendix C**)

12 Continue to **Module B: Initiation of Therapy** for Initial Treatment or Continuation of therapy

13 Was asthma diagnosis or decision to treat confirmed?

Yes

No → 14 Refer to specialist as appropriate (e.g., pulmonology and allergy) (see **Sidebar J**)

Module B: Initiation of Therapy

15 **Patient** with confirmed or suspected diagnosis of asthma (see **Sidebar A** and **Sidebar B**)

16 **Start or Continue therapy with an ICS and rapid-onset LABA as a reliever*** and initiate asthma education and care management (see **Sidebars, E, F and G** and **Recommendation 6**)

17 **Does the patient have more than mild symptoms?****

No → 18 **Are the patient's symptoms controlled?****

Yes

No

19 Address **adherence** and proper inhaler technique and/or **dose escalation** as appropriate (see **Sidebar G** and **Box 25**)

20 Re-Assess in 3 months or next visit: Symptom Control, Adherence, and InhalerTechnique. Revise Asthma Action Plan and coordinate with case manager, as needed. (see **Appendix F** and **Sidebar I**)

21 **Are symptoms stable for >90 days?**

No

Yes → 22 Consider initiating step-down therapy (see **Sidebar H**)

Yes

23 **Initiate ICS and rapid-onset LABA** as **controller and** reliever **(see Sidebar G)**

24 **Are the patient's symptoms controlled?****

Yes

No

25 **Increase to moderate** dose ICS and rapid-onset LABA as controller and reliever **(see Sidebar G)**

26 **Are the patient's symptoms controlled?****

Yes

No

27 **Continue moderate dose** ICS and rapid-onset LABA as controller and reliever, and **add LAMA** (Consider specialist referral, see **Sidebar G** and **Sidebar J)**

Abbreviations: LABA: long-acting beta agonist; ICS: inhaled corticosteroid; LAMA: long-acting muscarinic receptor; SABA: short-acting beta agonist

*Use lowest effective dose of ICS or intermittent therapy to reduce side effects

**At every visit address patient's adherence and proper inhaler technique

Sidebar A: Asthma Symptoms

- **Adult:** Daytime or nighttime chronic recurring cough, wheeze, chest tightness, and shortness of breath
- **Child:** Daytime or nighttime prolonged (more than 2 weeks) or recurring cough, wheeze, chest tightness, shortness of breath and other associated non-respiratory symptoms including irritability and being fatigued or tired

Sidebar B: Assessment

- Symptoms (see Sidebar A)
- Pattern (exercise, diurnal vs. nocturnal symptoms)
- Precipitating triggers (exercise, allergens, cold air, laughter)
- Aggravating factors/risk factors (see **Recommendations 1 and 2**)
  - Adults and children: Overweight/obesity, atopy, secondhand smoke exposure in children, history of lower respiratory infection
  - Adults: Depression, current smokers, OIF/OEF deployment
  - Occupational exposure
- Medical history including allergic rhinitis or eczema and physical exam (Appendix D)
- Comorbidities
- Effects of symptoms on quality of life, sleep, and performance (work or school)
- Response to treatment
- If not previously done, suggest radiograph if other diagnoses are being considered
- Review CBC for eosinophil count
- Assess patient/caregiver educational needs (health literacy, knowledge, skills, confidence, preferences for education methods, modalities)
- Utilize the ACT to assess asthma control

Abbreviations: ACT: Asthma Control Test; CBC: complete cell blood count; OIF/OEF: Operation Iraqi Freedom/Operation Enduring Freedom

Sidebar C: Alternative Evaluation for Asthma

Asthma is a clinical diagnosis, though diagnostic studies and response to treatment may be supportive of the diagnosis. In situations in which routine spirometry does not demonstrate obstruction yet there remains a clinical suspicion for asthma, any of the following options can be offered dependent upon site availability and patient/provider preferences:

- Spirometry with bronchodilator testing
- Bronchoprovocation testing
  - May be required for some Service Members or in some situations in the DOD
  - Methacholine is the preferred agent for bronchoprovocation
  - Bronchoprovocation should not be ordered for children; refer to specialist only
- Trial of treatment (See Module B)
- Specialist Referral (Pulmonary or Allergy and Immunology)

Abbreviations: DOD: Department of Defense

Sidebar D: Lung Function Testing

- **Spirometry:** initial test for use when obstructive or restrictive ventilatory disease are suspected
- Use bronchodilators testing to assess for reversibility if obstruction is noted on spirometry
- **Bronchoprovocation** should be considered when reactive airways disease/asthma is suspected despite baseline spirometry inconsistent with the diagnosis. Methacholine is a reasonable first line bronchoprovocative test. It may be required for some DOD personnel
- Bronchoprovocation should not be ordered for children; refer to specialist only
- Exercise challenge test considered for patients with symptoms only with exercise
- **Full PFT** (spirometry, plethysmography, and SB DLCO measurement): plethysmography allows for a confirmation of a restrictive ventilatory defect. SB DLCO measurement is used to assess for abnormal alveolar gas exchange

Abbreviations: DOD: Department of Defense; MCT: Marine Combat Training; PFT: pulmonary function testing; SB DLCO: single breath diffusing capacity of the lung for carbon monoxide

Recommendations can be accessed in the full guideline. Available at: https://www.healthquality.va.gov/.

Sidebar E: Asthma Education and Self-Management Support

Patients and caregivers should be informed of the diagnosis of asthma. Their current understanding of asthma and treatment adherence should be assessed, they should be provided evidence-based education and materials/resources, and they should be given the opportunity to ask questions so they can fully understand their asthma. Consistent follow-up should ensure the patient and caregiver are confident in their ability to self-manage their asthma and take a more active role in the management of their asthma with their healthcare team. Asthma education should include:

- Basic pathophysiology of asthma
- Typical asthma symptoms (see Sidebar A)
- How to identify well-controlled asthma
- Asthma patterns (exercise, nocturnal symptoms, and seasonal allergens) and risk factors (see **Recommendations 1 and 2**)
- Asthma exacerbations and precipitating triggers
- Goals of treatment and use of Asthma Action Plan
- Medication use (e.g., what it does, how to use it, potential side effects, and rationale for why each medication was selected) including assessment of device technique
- How to recognize loss of asthma control and steps to take to regain control of symptoms
- When and how to seek emergency care for asthma exacerbations
- Consider a personalized written Asthma Action Plan (see **Recommendation 3**)
- Consider a team approach to asthma management (dietician, pulmonologist, behavioral health provider, disease manager, health coach, etc.)
- Lifestyle changes and psychosocial considerations (see Sidebar F)

Sidebar J: Considerations for Specialty Referral

- Life-threatening exacerbation/intubation
- Multiple hospitalizations or ICU admission
- Difficulty confirming the diagnosis of asthma
- Persistent or severely uncontrolled asthma or frequent exacerbations
- Evidence of, or risk of, significant treatment side effects
- Suspected occupational asthma
- Symptoms suggesting complications or a sub-type of asthma (e.g., eosinophilia)

Abbreviations: ICU: intensive care unit

Sidebar F: Care Management

- **Multidisciplinary care management:**
  - Multidisciplinary care management consists of comprehensive assessment and treatment (not necessary to be in the same location) (see **Recommendation 15**)
  - CBT may be considered to reduce anxiety and improve quality of life (see **Recommendation 17**)
  - Triggers for worsening control should be identified for both indoor and outdoor settings, and if possible, steps taken to reduce exposure
  - Psychological comorbidities may affect the patient outcome
  - Medical co-occurring conditions should be identified and addressed such as: Gastroesophageal Reflux Disease (GERD), Obstructive Sleep Apnea (OSA), hormonal disorders, rhinitis, along with chronic disorders such as diabetes and depression
- **Lifestyle changes:**
  - Smoking/vaping cessation
  - Regular exercise to help reduce obesity (see **Recommendation 16**)
  - Weight management, choose healthy foods choices, allergy reducing diet choices
  - Avoidance of triggers especially outdoor seasonal allergies such as dust, tree and grass pollen, and fungus; indoor triggers such as dust mites, mold, scented candles and strong perfumes/odors
  - Ensure patient compliance with medications, allergy testing and treatment, etc.
  - Avoid environmental triggers which may include wood burning fireplaces or stoves in winter, particulate matter (PM) – ozone, vehicle exhaust and others
- **Psychosocial considerations and impact on asthma:**
  - Patient ability to absorb financial burden of medication cost
  - Time away from work, home responsibilities for follow-up (e.g., office visits, testing)
  - Increased anxiety may be experienced during times of asthma trigger exposure and lead to poor asthma control and/or perception of a lower quality of life
  - Family support of patient treatment emotionally, spiritually, and behaviorally
  - Reduce stress through stress management and reduction techniques, medications, mindfulness, etc.

Abbreviations: CBT: cognitive behavioral therapy

Sidebar G: Steps for Escalation and De-escalation of Asthma

- **Consideration for Step-up Therapy**
  - Low dose ICS + rapid-onset long-acting beta agonist as reliever
  - Low dose ICS + rapid-onset long-acting beta agonist as controller and reliever (See **Recommendation 6**, **Recommendation 7**, and **Recommendation 8**)
  - Moderate dose ICS + rapid-onset long-acting beta agonist as controller and reliever
  - Moderate dose ICS + rapid-onset long-acting beta agonist as controller and reliever + LAMA (See **Recommendation 9)**
    - Consider specialist referral
  - High dose ICS + rapid-onset long-acting beta agonist as controller and reliever + LAMA
    - Consider specialist referral for consideration of advanced treatments (e.g.., biologics, PD4 inhibitor, etc.)
- **Additional Consideration for Step-up Therapy**
  - Assess and address inhaler technique whenever step-up therapy is indicated
  - Monitor whether patient is overusing reliever beta agonist medications (e.g., SABA, rapid-onset long-acting beta agonist)
- **Consideration for Step-down Therapy**
  - Patient selection
    - De-escalation of therapy should be avoided in patients who cannot be closely monitored and patients at high risk of severe exacerbations, such as pregnant women and those with recent acute illness
  - Use lowest effective dose of ICS or intermittent therapy to reduce side effects. (See **Recommendation 11**, Sidebar H)
    - ICS dose should be reduced gradually with regular reassessment of asthma control
    - ICS should not be discontinued (See Recommendation 5) when de-escalating therapy. In cases of mild and well-controlled asthma, low dose ICS + rapid onset long-acting beta agonist should be continued as reliever therapy
    - Patients should have a written action plan including instructions for recognizing early signs of worsening asthma and steps to take, including medication adjustments and when to seek medical attention
- Refer to Appendix G, Tables G-1 and G-2 for discussion of specific medication

Sidebar H: Considerations for Stepping Down Therapy

- **Patient Selection for ICS Reduction:**
  - Do not reduce ICS dose in patients who cannot be closely monitored, such as those who are planning to travel or have inconsistent follow-up appointments
  - Avoid stepping down in individuals at high risk of severe exacerbations, such as pregnant women or those with recent acute illnesses
- **ICS Reduction Strategy:**
  - Decrease the ICS dose gradually by 25-50% every 3 months
  - The goal is to reach the lowest effective maintenance dose that continues to control asthma symptoms
  - Assess asthma symptoms regularly throughout the tapering process to ensure stable control
- **Discontinuing LABAs:**
  - LABAs can generally be discontinued without a taper, as they do not require a gradual reduction like ICS
- **Action Plan for Symptom Management:**
  - Patients should have a written action plan to monitor for any signs of worsening asthma
- **Action Plan:**
  - Ensure that the patient has a written asthma action plan
  - The action plan should include instructions for recognizing early signs of worsening asthma and steps to take, including medication adjustments and when to seek medical attention
  - Make sure they have access to adequate medication and know what actions to take if symptoms return or worsen after discontinuing LABA or stepping down the ICS
- Refer to Appendix G, Tables G-1 and G-2 for discussion of specific medications

Sidebar I: Considerations for Short Term Follow-up

- Recent hospitalization
- Urgent Care (UC)/Emergency Department (ED) visit
- Step medication change
- Recent exacerbation
- Increasing use of rescue inhalers
- Inability to use inhaler correctly

Abbreviations: ICS: inhaled corticosteroid; LABA: long-acting beta agonist; LAMA: long-acting muscarinic antagonist; PD4: phosphodiesterase-4; SABA: short-acting beta agonist