Asthma (12 years+)

Diagnosis: Subjective + Objective Findings

- History: cp, dyspnea, wheezing and/or cough
  - Variable over time
  - Triggered by viral infections, exercise, allergens, weather change, laughter, or irritants
- Reversibility: FEV_1 or FVC improvement by ≥ 12% and 200 mL after bronchodilator use.

* May use PEF if spirometry not available (PEF increase ≥ 20% after bronchodilator)

Diagnosis: Other Helpful Tests

- Bronchial Challenge (e.g., Methacholine Challenge): Tests for airway hyperresponsiveness:
  - FEV_1 reduced by 20% or more suggests asthma diagnosis
- FeNO Testing: Measures airway inflammation to support diagnosis.

Key Points

- Diagnosis is based on a combination of symptoms, history, and objective testing.
- Symptoms should vary over time or with triggers, and reversible airflow limitation confirms the diagnosis.

* In primary care, studies suggest that a significant portion (around 25-35%) of patients diagnosed with asthma may not actually have the condition

Asthma Control: Symptom Control + Future Risk

Asthma Control: Symptom Control

Based on past 4 weeks:

- Daytime asthma symptoms more than twice/week?
- Any night waking due to asthma?
- Rescue reliever for symptoms more than twice/week?
- Any activity limitation due to asthma?

Classification:

- Well-controlled: None of the above features
- Partly controlled: 1-2 of the above features
- Uncontrolled: 3-4 of the above features

Asthma Control: Future Risk

Exacerbations

- Prior severe exacerbation (past 12 months)
- SABA overuse, poor adherence, incorrect technique
- Low FEV_1, smoking, comorbidities

Persistent airflow limitation

- Long disease duration, delayed ICS use
- Persistently low FEV_1, frequent exacerbations
- Smoking exposure

Risk of Medication side effects

- High-dose ICS or repeated oral steroids
- Prolonged systemic steroid exposure

Asthma Severity

- **Mild**: Asthma is well controlled with step 1 or 2 treatment.
- **Moderate**: Asthma is well controlled with step 3 treatment.
- **Severe**: Step 4 or 5 treatment is required to control symptoms, or symptoms are uncontrolled despite this treatment.

* Always consider future risk in determining severity

Initial Asthma Treatment Based on Asthma Control

Infrequent symptoms + No high-risk features: Start at Step 1–2
More frequent symptoms OR high-risk features: Start at Step 3

Preferred Track 1 (track 2 in white) →

STEP 1-2	STEP 3	STEP 4	STEP 5
As needed low dose ICS-Formoterol* (Step 1 Take ICS whenever SABA taken; Step 2 low dose ICS maintenence)	Low dose maintenence ICS-formoterol* (low dose ICS-LABA)	Medium dose ICS-formoterol* (Medium ICS-LABA)	Add-on LAMA Assess phenotype. Consider high dose ICS-formoterol*, +/- biologics (Same as above except consider high dose ICS-LABA instead of ICS-formoterol*)

RESCUE: As-needed low-dose ICS-formoterol* (as needed ICS-SABA, or as needed SABA)

Other control options ⇢ *Exercise, weight loss, smoking cessation, pulmonary rehab, vaccines; LTRA†, add HDM SLIT‡, LAMA at step 4, azithromycin, last resort OCS*

*ICS-formoterol: max dose of formoterol in any one day (reliever plus maintenance doses, if used) is 12 inhalations; Do not use ICS-formoterol with other ICS-LABA
†LTRA: Leukotriene receptor antagonist, if prescribing LTRA, advise patient of neuropsychiatric risks; ‡HDM SLIT: house dust mite sublingual immunotherapy

Reference: GINA 2025 Asthma Guidelines

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Biologics

- Omalizumab (Xolair): IgE/Anti-IgE M. Ab
- Mepolizumab (Nucala): IL-5/Anti-IL-5 M. Ab
- Benralizumab (Fasenra): IL-5 receptor/Anti-IL-5 receptor M. Ab
- Reslizumab (Cinqair): IL-5/Anti-IL-5 M. Ab
- Dupilumab (Dupixent): IL-4 and IL-13/Anti-IL-4R alpha M. Ab
- Tezepelumab-ekko (Tezpire): TSLP/Anti-TSLP M. Ab

Consider Step Down Therapy

- When asthma is well controlled for 2-3 months, consider stepping down.
- Aim to find the lowest dose that controls both symptoms and exacerbations (and minimize side effects)
- Provide Asthma Action Plan when stepping down
- Wait 2-3months to confirm asthma is stable before stepping down again.

Monitoring Asthma Control

Subjective:

- ACT
- ACQ

Objective Measures:

- Sprometry
- FeNO
- Peak flow

Asthma Comorbidities

- Common Comorbidities:
  - GERD
  - Obesity
  - Allergic rhinitis
  - OSA
- Treatment of comorbidities may improve asthma control

Asthma Phenotypes (most common types)

- Allergic: Triggered by allergies
- Non-allergic: Not associated w/ allergy, less responsive to steroids
- Late-onset asthma: Presents in adulthood
- Cough-variant: Only symptom is cough
- Asthma with obesity: Obese with little eosinophils
- Asthma with persistent airflow limitation: Airway remodeling

Type 2-high asthma (which includes allergic and eosinophilic phenotypes), key biomarkers include:

- Blood eosinophils ≥300 cells/μL
- FeNO ≥25 ppb
- Serum total IgE and allergen-specific IgE for allergic asthma phenotypes

* Asthma phenotype and key biomarkers are used to determine which biologic is likely to be effective

Non Pharmacological Interventions

- •Trigger Avoidance: Smoke, pollution, dust mites.
- •Lifestyle: Weight management and regular exercise.
- Environmental Control: Reduce indoor allergens

Asthma Action Plan

- Use for all asthmatics (especially moderate to severe asthmatics, poor symptom awareness, individuals with h/o severe exacerbations)
- **Green** (>80% peak flow best): well-controlled, continue maintenance Rx
- **Yellow** (50-79% peak flow best): Increase reliever
- **Red** (<50% peak flow best): Reliever + OCS & seek care

Managing Asthma Exacerbations

Mild to Moderate

- Pulse ox 90-95%
- PEF > 50% best (or predicted)

Severe

- RR > 30/min
- Pulse > 120 bpm
- Pulse Ox <90%
- PEF ≤ 50% best (or predicted)

LIFE-THREATENING

- Drowsy, confused, silent chest

Start Rx

- Reliever 4-10 puffs + spacer (q20min x 1 hr)
- Prednisolone: 40-50mg
- Oxygen: target Sa02 93-95%

Worsening → **Transfer to ER**

- **While waiting: SABA, ipratropium, oxygen, systemic corticosteroid**

Improving →

Assess for Discharge

- Symptoms improved
- PEF improving, ≥ 60-80% personal best (or predicted)
- Sa02 > 94% (RA)
- Resources at home

Arrange for Discharge

- Reliever: as needed (not regularly)
- Controller: start, or step up ICS therapy
- Prednisolone: continue, usually for 5-7 days
- Follow up: within 2-7 days

Follow Up Visit

- Symptoms - improving?
- Reliever: reducing use?
  - If not, may need to extend prednisolone
- ICS-controller - continue higher dose for 1-2wks or longer
- Address underlying cause: exposures, technique, adherence
- Action Plan: Assess to ensure patient understands and is using properly
- If >1-2 exacerbations in 1 yr --> Refer

Vaccines

Routine vaccines including:

- Yearly influenza
- Covid
- Pneumococcal
- RSV (≥ 60 years)

Reference: GINA 2025 Asthma Guidelines

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