

Pediatric Case Study- Clinical Application NHLBI Guidelines

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***KEY POINTS IN PEDIATRIC
POPULATION from the
NHLBI ASTHMA
GUIDELINES***

SMART THERAPY

- What does it teach us for our pediatric patient population?
 - **Retraining Our Brains** and that of our Patients to using just **one inhaler as both maintenance and rescue**.
 - The use of a combination inhaler containing budesonide and formoterol **as both maintenance and quick relief therapy (SMART)** has been recommended as an improved method of using inhaled corticosteroid/long-acting β agonist (ICS/LABA) **therapy**.

Intermittent Corticosteroids

- In children ages 0-4 years with recurrent wheezing, a short (7-10 day) course of daily inhaled corticosteroids along with an as-needed short-acting bronchodilator (e.g., albuterol sulfate) is recommended at the start of a respiratory tract infection.
- In people ages 4 years and older with mild to moderate persistent asthma who use inhaled corticosteroids daily, increasing the regular inhaled corticosteroid dose for short periods is not recommended when symptoms increase or peak flow decreases.
- For people ages 4 and older with moderate to severe persistent asthma, the preferred treatment is a single inhaler that contains an inhaled corticosteroid and the bronchodilator formoterol. This should be used as both a daily asthma controller and quick-relief therapy.
- People ages 12 and older with mild asthma may benefit from inhaled corticosteroids with a short-acting bronchodilator for quick relief. Treatment may include inhaled corticosteroids daily or as needed when asthma gets worse.

FeNO (Fractional Excretion Nitric Oxide)



FeNO (Fractional Excretion Nitric Oxide) Use in Asthma

1) What is FeNo ?

Indication of Type II inflammation in Asthma. Can be used to determine how much lung inflammation there is for allergic and eosinophilic asthma. FeNo can also be used to assess inhaler compliance and asthma control.

2) When is FeNO indicative of another diagnosis other than asthma ?

FENO:

Values <25 ppb in adults and <20 ppb in children (aged 5-12) are inconsistent with type 2 (T2) inflammation and would suggest a diagnosis other than asthma

FeNO

- FeNO testing in people **ages 5 and older** is recommended when either the diagnosis or the approach to therapy is uncertain.
- FeNO testing should not be used alone to assess asthma control or predict the clinical course of disease.
- In children ages 4 years and younger who have recurrent episodes of wheezing, FeNO measurement does not reliably predict the future development of asthma.

FeNO

- **FeNO levels** categorized as:
 - **Low/normal**: <25 ppb (adults), <20 ppb (children)
 - **Intermediate**: 25–50 ppb (adults), 20–35 ppb (children); or
 - **High**: >50 ppb (adults), >35 ppb (children)

LAMA (Long-Acting Muscarinic Agonists)

- For children **under 12** and most people 12 or older with asthma that is not controlled by an inhaled corticosteroid alone, **adding a LABA** rather than a LAMA to an inhaled corticosteroid is preferred.
- For **people 12 years old and older**, if a LABA cannot be used, a **LAMA may be used with inhaled corticosteroid** treatment instead of continuing the inhaled corticosteroid alone.
- For people **12 years old and older whose asthma is not controlled with an inhaled corticosteroid plus a LABA**, **adding a LAMA is recommended.**

Peds Case Study #1



Josie is a 6 yo little girl coming into the office with her third wheezing episode. She has had two episodes of wheezing prior to this one. Those previous episodes resolved with use of oral steroid bursts and albuterol as needed. All episodes have been viral-induced. And her Mom is very concerned as it seems that everytime that Josie has a cold- it just drops to her chest and she ends up wheezing and developing a barky cough. She is also concerned about her needing oral steroids once again.

There is no family history of atopy nor asthma.

Current Meds: Flovent 44 mcg- 2 p inh bid, Proair HFA PRN

Case Study- Identifying Josie's Triggers

- **1) Viral Triggers:**
 - Josie has had two previous episodes of viral-induced wheezing in her lifetime.
 - Both episodes required oral steroid bursts and albuterol.
 - Previous episodes were both in winter.
 - Josie is in school and currently in kindergarten.

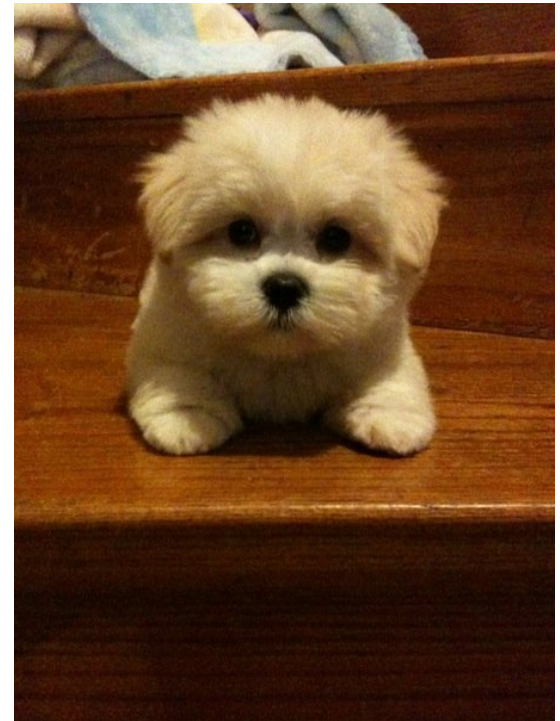
Case Study- Identifying Josie's Triggers

2) Allergic Triggers:

Josie tends to sneeze and develop post-nasal drip every spring and fall.

Her Mom treats her symptoms with benadryl as needed.

Josie also relates very excitedly that one month ago they got a little dog at home named Friday. Friday sleeps in her bed because she is little.



Case Study- Identifying Josie's Triggers

3) Exercise

Josie reveals that she plays tball every summer. This last summer she states that when she would run the bases really fast, she sometimes felt like there was a cat in her chest.

She states that when she felt that way- she would have to slow down and sometimes she would be tagged out. She hated that.

She also states that she gets a really bad cough everytime they have to sprint in gym class.



Josie's Spirometry

- *Josie's spirometry revealed:*
 - Obstructive Pattern FEV1/FVC ratio = 70%
 - An increase in FEV1 of 13% s/p bronchodilator
 - An increase in FEF 25-75 of 22% s/p bronchodilator
 - **Results consistent with diagnosis of Asthma.**
 - **Josie's FeNO revealed: 38 ppb (High)**

How did Josie do ?

Josie gets started on Symbicort 80/4.5-1puff inhaled twice a day and with use Symbicort PRN exercise/SOB/wheezing.

Josie has no more wheezing episodes the rest of the winter.

Josie gets skin tested and skin test positive to trees and ragweed. Gets started on zyrtec through the spring and fall seasons.

Josie's dog now sleeps outside her bedroom.

Josie also turns out to be quite successful at tball since she is no longer short of breath nor developing chest tightness as she runs the bases.

Josie gets the game ball !!!





Children's
Hospital
of The King's
Daughters

Normal Mode

MY ASTHMA TREATMENT :

- Symbicort 80/4.5 (Bud/Formoterol)
- Symbicort 160/4.5 (Bud/Formoterol)
- _____

MY REGULAR TREATMENT EVERY DAY:

- Take Inhalation(s) in the morning
- And inhalation(s) in the evening every day
- Take inhalation(s) before exercise

RELIEVER:

- Use Symbicort 2 inhalations whenever needed for relief of my asthma symptoms
- OR
- Use albuterol, 2 inhalations as needed for relief of asthma symptoms

MY ASTHMA IS STABLE IF:

- ⇒ I can take part in normal physical activity without asthma symptoms AND
- ⇒ I do not wake up at night or in the morning because of asthma

Patients Name: _____

Dates: _____

Provider _____

Usual best PFT: _____ L/min

Provider phone: _____

Asthma Flare-Up

IF OVER A PERIOD OF 2-3 DAYS:

- ⇒ My asthma symptoms are getting worse OR not improving OR
- ⇒ I am using more than _____ reliever inhalations a day.

I SHOULD:

- Continue to use my regular everyday treatment
- PLUS 2 inhalations of Symbicort whenever needed to relieve symptoms every 4-6 hours
- OR
- Plus 2-4 puffs of albuterol as my reliever medicine whenever needed to relieve symptoms every 4-6 hours
- Begin yellow zone ICS rescue

Yellow Zone Treatment

Take puffs of _____ twice per day for _____ days

Call the office if needing yellow zone medications for period of 2-3 days

5-11 year olds not to exceed 8 puffs and >12 not to exceed 10 puffs of Symbicort daily for reliever

Asthma Emergency

SIGN OF AN ASTHMA EMERGENCY :

- ⇒ Symptoms getting worse quickly
- ⇒ Extreme difficulty breathing or speaking
- ⇒ Little or no improvement from Symbicort or Albuterol reliever inhalations

IF I HAVE ANY OF THE ABOVE DANGER SIGNS, I SHOULD Dial 911 FOR AN AMBULANCE AND SAY I AM HAVING A SEVERE ASTHMA ATTACK.

WHILE I AM WAITING FOR THE AMBULANCE START MY ASTHMA FIRST AID PLAN:

- ⇒ Sit up right and stay calm.
- ⇒ Take 2 inhalations of Symbicort. Wait 1-3 minutes. If there is no improvement take another 2 inhalations of Symbicort (up to a maximum of inhalations)
- OR
- ⇒ If only Ventolin is available, take 4 -6 puffs every 10-15 minutes until help arrives
- ⇒ Even if my symptoms appear to settle quickly, I should see my doctor immediately after a serious asthma attack.

- Thank You! Questions ???