

EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

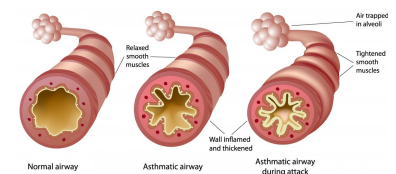
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Asthma Exacerbations in Children

A 4 year old male with no past medical history presents to the ED with shortness of breath over the past few hours. According to his parents he has never had symptoms like this before. Denies recent illness, fever/chills, cough, nausea, vomiting. Patient is afebrile and normotensive. Tachycardic at 144bpm, tachypnic at RR 60, O2 saturation at 93%. On physical exam, patient is in distress, using accessory muscles and does not engage in conversation. There is decreased air movement on auscultation and inspiratory and expiratory wheezing. Remainder of the exam is WNL. Which of the following is the most appropriate initial treatment for this patient's condition?

- A. Montelukast
- B. Duoneb (Ipratropium/Albuterol)
- C. ABG
- D. Intubation
- E. Chest X Ray



<https://toolkit.severeasthma.org.au/management/asthma-pathophysiology/>

During an asthma exacerbation the patient's airways are constricting which makes it difficult to breath. There is also inflammation of the airway. Medical management targets these mechanisms to improve breathing during an exacerbation (1).

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

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The correct answer is B. Duoneb (Ipratropium/Albuterol) works by providing bronchodilation and has a rapid onset. Montelukast is used for chronic management. ABG won't affect management. Most asthmatics are hypercapnic initially and improves with treatment. CXR can be used if pneumonia is a suspected trigger but does not affect initial management.

Discussion

Asthma affects 25 million people in the US, 6 million of these are children making asthma the most common chronic condition in childhood. Approximately 135,000 children are hospitalized each year due to asthma exacerbations.

The goal of treatment is rapid reversal of airway obstruction, correcting hypoxemia, correcting hypercapnia, reduce the chance of recurrence by optimizing maintenance treatment.

Treatment

Treatment involves supplemental oxygen, albuterol/ipratropium, steroids, and magnesium.

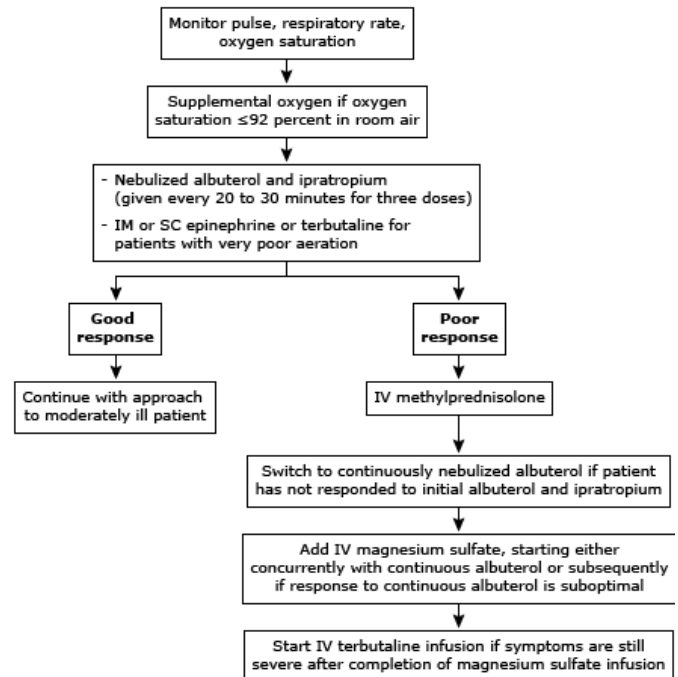
Supplemental oxygen. Goal is O₂ saturation above 94%.

Albuterol/Ipratropium. Causes bronchodilation by relaxing smooth muscle. Peak effect is seen within 15 to 30 minutes.

Steroids. Reduces inflammation and secretions association with exacerbations. Typically used in moderate or severe exacerbations. Effect noticed 2 to 4 hours after administration.

Magnesium. Usually given in severe exacerbations. Studies have shown its use is associated with fewer hospitalizations (2).

Treatment (Continued)



Admission

If the patient does not improve despite treatment, admission to the PICU will be needed. These patients may continue to have significant wheezing, accessory muscle use, altered mental status, etc. The Asthma Severity Score is used to assess response to treatment, determine if a patient requires admission, and correlates to length of stay in the PICU (2). Patients are classified into 3 categories based on scoring: Severe (≥ 12), Moderate (8 – 11), Mild (≤ 7).

For a list of educational lectures, grand rounds, workshops, and didactics please visit BrowardER.com and **click** on the **"Conference"** link.

All are welcome to attend!

Discharge

Patients who have improvement in their symptoms with treatment may be discharged home. It's important for patients to follow up with their primary care doctor after discharge from the hospital. The doctor will be able to go over the asthma action plan with the families and monitor the response to medication. Patients are usually discharged on an oral steroid and inhaled albuterol. Families should be instructed to return to the ER if there is worsening shortness of breath or difficulty speaking.



ABOUT THE AUTHOR

This month's case was written by Fatimat Shotande. Fatimat is a 4th year medical student from FIU HWCOC. She did her emergency medicine rotation at BHMC in September 2019. She plans on pursuing a career in Internal Medicine-Pediatrics after graduation.


Child Asthma Action Plan
0 to 5 years of age

Patient Name: _____
Medical Record #: _____
Healthcare Provider's Name: _____ DOB: _____
Healthcare Provider's Phone #: _____ Completed by: _____ Date: _____

Long-Term Control Medicines (Use Every Day To Stay Healthy)	How Much To Take	How Often	Other Instructions (such as spacers/masks, nebulizers)
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
Quick-Relief Medicines	How Much To Take	How Often	Other Instructions
		Give ONLY as needed	NOTE: If this medicine is needed often (_____ times per week), call clinician.

GREEN ZONE

Child is **well** and has no asthma symptoms, even during active play.



PREVENT asthma symptoms everyday:
 • Give the above long-term control medicines every day.
 • Avoid things that make the child's asthma worse:
 Avoid tobacco smoke; ask people to smoke outside.

YELLOW ZONE

Child is **not well** and has asthma symptoms that may include:

- Coughing
- Wheezing
- Runny nose or other cold symptoms
- Breathing harder or faster
- Awakening due to coughing or difficulty breathing
- Playing less than usual

CAUTION. Take action by continuing to give regular asthma medicines every day AND:

Give _____ (include dose and frequency)

If the child is not in the Green Zone and still has symptoms after one hour then:

Give more _____ (include dose and frequency)

_____ (include dose and frequency)

Call _____ (include dose and frequency)

Other symptoms that could indicate that your child is having trouble breathing may include: difficulty feeding (grunting sounds, poor sucking), changes in sleep patterns, cranky and tired, decreased appetite.

RED ZONE

Child **feels awful!** Warning signs may include:

- Child's wheeze, cough, or difficulty breathing continues or worsens, even after giving yellow zone medicines.
- Child's breathing is so hard that he/she is having trouble walking/talking/feeding/playing.
- Child is drowsy or less alert than normal.

MEDICAL ALERT! Get help!
 Take the child to the hospital or call 9-1-1 immediately!
 Give more until you get help. (include dose and frequency)
 Give _____ (include dose and frequency)

Danger! Get help immediately!

Call 9-1-1 if:

- The child's skin is sucked in around neck and ribs, or
- Lips and/or fingernails are gray or blue, or
- Child does not respond to you.

Take Home Points

- Treatment involves supplemental oxygen, albuterol/ipratropium, steroids, and magnesium.
- If a patient is not improving despite treatment, admission is warranted.
- Patients who improve can be discharged with education about how to manage their asthma.

REFERENCES

1. The University of New Castle, Australia. (2019 Feb 11). Asthma Pathophysiology. <https://toolkit.severeasthma.org.au/management/asthma-pathophysiology/>
2. Wood, P.R., Hill, V.L. (2009). Practical Management of Asthma. *Pediatrics in Review*. 30(10), 375-385.