

Status Asthmaticus

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PGY 1

Emergency Room

10/12/12

Question 1

A 5 year-old Asthmatic girl who presents to the ER with a 1 day history of cough and wheezing. She was treated at home with albuterol inhaled nebulization 3 doses every 2 hours just before her arrival. She is agitated, has supraclavicular retractions, wheezing of the entire expiratory phase and decreased inspiratory breath sounds.

Vitals: WT 25kg; Temp 37 degrees C; RR 44; HR 130; BP 106/70; SPO2 94%.

Initial ER management included albuterol- atrovent inhaled nebulization 3 doses and prednisone 50mg PO a Stat dose . She is on Albuterol continuous inhaled nebulization.

Vitals: RR 38; HR 112; BP 105/70; SPO2 97%

What should be considered next in her management? Select 1 correct answer.

A. chest X ray

B. magnesium sulfate

C. give heliox

D. intubation

E. all of the above

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CHEST X RAY

Not routine.

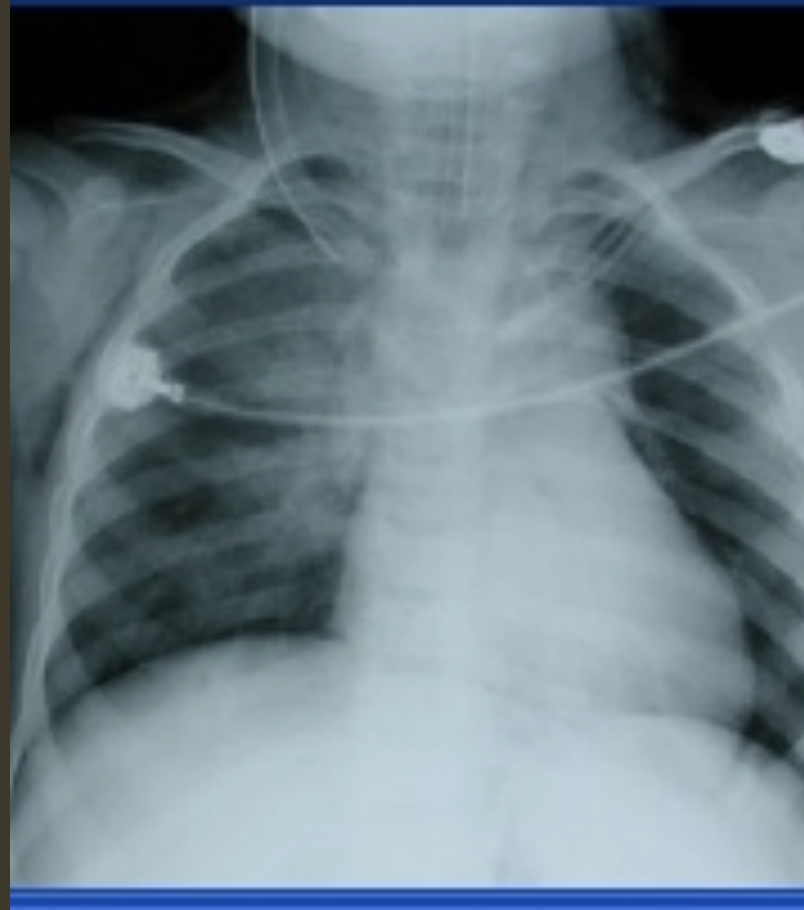
Exceptions are suspicion of:

Pneumonia

Barotrauma

Patient is
intubated/
ventilated

Other causes of
wheezing like a
foreign object



Magnesium Sulfate

Mechanism of action: Smooth muscle relaxation by inhibition of calcium uptake= broncho dilation

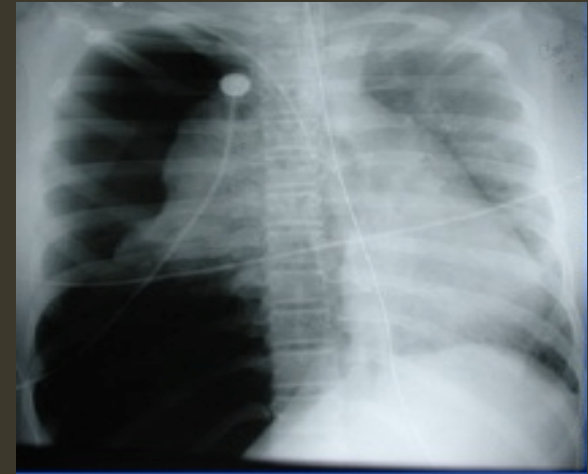
- Used in moderate to severe exacerbations that are minimally responsive or unresponsive to initial treatment (SABA, oral corticosteroids, and ipratropium)
- Benefit: reduce hospitalizations and to improve lung function without significant side effects. Possible side effects to be aware of include hypotension, hypotonia, or abnormal reflexes when given in excess of 25-75mg/kg IV over 20 minutes

Heliox

- There is insufficient evidence and lack of consensus regarding the effectiveness of heliox in acute exacerbation of asthma to make a recommendation for its routine use (Rivera 2006 [2b], SIGN 2008 [5a]).
- Note: Heliox-driven albuterol nebulization may be considered for patients who have life-threatening exacerbation or who remain in severe exacerbation after intensive conventional adjunctive therapy (Rodrigo 2006 [1a], Kim 2005 [2b], NAEPP 2007 [5a]).

Hesitate to Intubate

- >50% morbidity/mortality in severe asthma occurs during or immediately after intubation
- Tracheal foreign body aggravates bronchospasm
- Positive pressure ventilation increases risk of barotrauma and hypotension



Question 2

2 year-old boy who presents with his second episode of wheezing, cough and moderate dyspnea; he has a history of atopic allergies and nocturnal cough, both his sister and mother suffer from asthma. What signs(s) predict impending respiratory failure?

- A. paradoxical thoracoabdominal motion
- B. bradycardia
- C. minimum or absent wheeze
- D. mental confusion
- E. all of the above

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Thoracoabdominal dissociation

- Thoracoabdominal dissociation or paradoxical breathing (chest collapses on inspiration while abdomen protrudes) is a sign of respiratory fatigue or muscle weakness.

Bradycardia

- Tachycardia is commonly present in children with respiratory distress due to increased sympathetic tone or in part may reflect dehydration due to tachypnea. However, **Bradycardia** is a late and ominous sign that often signals impending cardiopulmonary arrest

Minimum or absent wheeze

- Diffuse expiratory wheezes are a sign of lower airway intrathoracic obstruction typically caused by asthma or bronchiolitis.
- In severe cases air movement may be poor, wheezes may not be present

Mental Confusion

Mental confusion, restlessness, anxiety or combativeness suggest hypoxia.

Somnolence or lethargy may be the result of severe hypoxia, hypercarbia and / or respiratory fatigue

Table 1

Formal Evaluation of Asthma Exacerbation Severity in ED or Urgent Care Setting														
	Mild	Moderate	Severe	Subset: Respiratory Arrest Imminent										
Symptoms														
Breathlessness	While walking Can lie down	While at rest (infant: softer, shorter cry, difficulty feeding) Prefers sitting	While at rest (infant: stops feeding) Sits upright	While at rest										
Talks in	Sentences	Phrases	Words	Cannot talk										
Alertness	Normal or may be agitated	Usually agitated	Usually agitated	Drowsy or confused										
Signs														
Respiratory rate	Normal or increased	Increased	Increased, often >30/minute	Normal or decreased										
Guide to rates of breathing in awake children: <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><i>Age</i></td> <td style="text-align: center;"><i>Normal Rate</i></td> </tr> <tr> <td style="text-align: center;">< 2 months</td> <td style="text-align: center;">< 60/minute</td> </tr> <tr> <td style="text-align: center;">2 to 12 months</td> <td style="text-align: center;">< 50/minute</td> </tr> <tr> <td style="text-align: center;">1 to 5 years</td> <td style="text-align: center;">< 40/minute</td> </tr> <tr> <td style="text-align: center;">6 to 8 years</td> <td style="text-align: center;">< 30/minute</td> </tr> </table>					<i>Age</i>	<i>Normal Rate</i>	< 2 months	< 60/minute	2 to 12 months	< 50/minute	1 to 5 years	< 40/minute	6 to 8 years	< 30/minute
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6 to 8 years	< 30/minute													
Use of accessory muscles; suprasternal retractions; nasal flaring; abdominal breathing	Usually not	Commonly	Usually	Paradoxical thoracoabdominal movement										
Wheeze	Moderate, often only end expiratory	Loud; throughout exhalation	Loud, throughout inspiration and exhalation or may be absent	Minimal or absent										
Pulse/minute (at initial presentation)	< 100	100 to 120	> 120	Bradycardia										
Pulsus paradoxus	Absent <10 mmHg	May be present 10 to 25 mmHg	Often present > 25 mmHg (adult) 20 to 40 mmHg (child)	Absence suggests respiratory muscle fatigue										

References

- Acute Asthma Guideline, Cincinnati Children's Hospital Medical Center: Evidence-based care guideline for management of acute asthma exacerbation in children
Asthma Exacerbation in Children Pediatric Evidence Based Care Guidelines, Cincinnati Children's Hospital Medical Center, Guideline 4, pages 1-35, September 16, 2010
- (Rowe 2009b [1a], Mohammed 2007 [1a], Ciarallo 2000 [2b], SIGN 2008 [5a])
- Table 1: Adapted from the National Heart Blood and Lung Institute, National Education and Prevention Program Expert Panel Report 3: Diagnosis and Management of Asthma, 2007 (LocalConsensus [5], NAEPP 2007 [5a]).

References

http://

[www.uptodate.com/contents/emergent-
evaluation](http://www.uptodate.com/contents/emergent-evaluation-of-acute-respiratory-compromise) -of-acute-respiratory-compromise

Thank You