Inclusion Criteria
1-18 y.o. with asthma exacerbation admitted to general medicine service.

Exclusion Criteria
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Chronic Conditions:
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- Congenital and acquired heart disease
- Airway issues: (e.g. vocal cord paralysis, tracheomalacia, tracheostomy dependent)
- Medically complex children
- Immune disorders
- Sickle cell anemia

**RESPIRATORY SCORE (RS)**

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<th>VARIABLE</th>
<th>0 POINTS</th>
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<tr>
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**RETRACIONS**

- None
- Subcostal or intercostal
- 2 of the following: subcostal, intercostal, substernal, OR nasal flaring (infant)
- 3 of the following: subcostal, intercostal, substernal, suprasternal, supraclavicular OR nasal flaring/head bobbing (infant)

**DYSPNEA**

<table>
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<tr>
<th>0-2 years</th>
<th>Normal feeding, vocalizations and activity</th>
<th>1 of the following: difficulty feeding, decreased vocalization or agitated</th>
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<td>2-4 years</td>
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**AUSCULTATION**

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<th>Normal breathing, no wheezing present</th>
<th>End-expiratory wheeze only</th>
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Pediatric Asthma: ED Management

Assess and Score at Triage (Time 0)
- Supplemental O2 should be administered to keep O2 saturation ≥90%
- Time 0 RS 1-5
  - Albuterol Neb 5mg
  - Dexamethasone 0.6mg/kg x 1 (16mg max)

Time 0 RS 6-12
- Albuterol Neb 7.5mg, repeat after 10 minutes (Total: 15mg)
- Ipratropium Neb 1mg, after 10 minutes can give another 0.5mg (no extra dose if < 2yo pts)
- Dexamethasone 0.6mg/kg x 1 (16mg max)

Assess and Score at end of 1st hour (Time 1)

1st HOUR (ED) PHASE 1a
- Time 1 RS 1-4
  - If at Time 0 was RS 1-5, discharge now
  - If at Time 0 was RS 6-9, observe for at least 1 hour
  - If at Time 0 was RS 10-12, observe for at least 2 hours

Time 1 RS 5-8
- Albuterol Neb 5mg

Time 1 RS 9-12
- Albuterol Neb 7.5mg, repeat after 10 minutes (Total: 15mg)
- Ipratropium neb 1mg, after 10 minutes can give another 0.5mg (no extra dose if < 2yo pts)
- Magnesium Sulfate IV 50mg/kg x 1 (max 2g) for age >2 years – give one NS bolus prior to Mag. Mag should be given over 30 mins
  *Must watch for 2hrs prior to admitting/transferring pt

Assess and Score at end of 2nd hour (Time 2)

2nd HOUR (ED) PHASE 1b
- Time 2 RS 1-4
  - Discharge now
- Time 2 RS 5-8
  - Albuterol Neb 5mg
  - Ipratropium neb 1mg, after 10 minutes can give another 0.5mg— if not previously given in phase Ia/b (no extra 0.5mg dose if < 2yo pts)

Time 2 RS 9-12
- ICU consult (transfer) for RS 10-12
- Albuterol continuous neb 20 mg/hr
- Magnesium Sulfate IV 50mg/kg x 1 (max 2g) for age >2 years—if not yet given before (only get a total of one Mag dose in ER) Give one NS bolus prior to Mag
  *Must watch for 2hrs prior to admitting/transfer
- If undecided (on transfer), consult with Peds attending in whether to admit for Phase II Inpatient

Assess and Score at end of 3rd hour (Time 3)

3rd HOUR (ED) PHASE 1c
- Time 3 RS 1-8
  - Admit to Inpatient Phase III
- Time 3 RS 9-10
  - Albuterol continuous neb 20 mg x 1 hr
  - Huddle with: Floor Team Leader, Floor Team and consider either transfer/PICU or Peds Admit
  - Consult Peds to admit for Inpatient Phase III or transfer

Time 3 RS 11-12
- Transfer for ICU care

4th HOUR (ED) PHASE 1d

Urgent Care Transfer Criteria
- Score > 8 following first hour of nebulized albuterol—send by EMS
- Score 5-8 following 5mg nebulized albuterol in second hour—send by EMS
- Signs of clinical deterioration or poor clinical response to therapy

ED Discharge Criteria
- Time 1 RS 1-4 for minimum of 1 hour (Patients with an initial RS of 10-12 should be observed for 2 hours prior to discharge)
  - Tolerating oral intake
  - Adequate family teaching
  - Follow-up established

Discharge Instructions
- Continue to use albuterol (2.5mg if ≤4yrs old; 5mg if ≥5yrs old) every 4 hours until seen by provider
- Follow up with provider within 24-48 hours (as possible)
Pediatric Asthma: Inpatient Management

Supplemental O2 should be administered to keep O2 saturation \( \geq 90\% \) (when awake); \( \geq 88\% \) when sleeping.

**PHASE II: INPATIENT**
- Albuterol Cont Neb 15mg/hr
- Solumedrol 1mg/kg BID (max 80mg/day)
- H2-Blocker
- Assessment Q1H
- Advance after 1 hr of treatment for score 1-8

**Call RT Team Leader, Peds Team Leader, Physician:**
- Signs of clinical deterioration
- RS 9-10 on continuous albuterol for 2 hours in phase II
- RS 11-12

**RISK Watch on Inpatient**
- Dashboard until RS < 9

**ICU Transfer**
- RS 11-12 with 2-3 hours continuous
- Signs of clinical deterioration

**Phase Change by Respiratory Score is the standard of care for patients on the asthma pathway**
- Scoring is performed by RN & RT

**Patient with unique clinical conditions that complicate their asthma treatment:**
- **Phase Change by Physician Assessment & Order Only**
  - Scoring by RN, RT & MD
  - Provider to assess pt every 1-3 hrs

**Conditions in which this is appropriate:**
- Patient transferred from ICU
- Complex asthma history (e.g. hx intubation for asthma)
- Medical comorbidity (e.g. morbid obesity)

**PHASE III: INPATIENT**
- Albuterol Neb 5mg Q2H
- Prednisone 1mg/kg BID (max 80mg/day)
- Assessment Q2H
- Begin discharge teaching and planning

**PHASE IV: INPATIENT**
- Albuterol Neb 5mg Q4H
- Assessment Q4H
- If \( \geq 5\) yrs old – after 1-2 trials of 5mg Q4H & doing well, ok to discharge

**PHASE V: INPATIENT**
- If 0-4 yrs old, Albuterol Neb 2.5mg Q4H
- Assessment Q4 hours
- After 1-2 trials of Q4H & doing well, ok to discharge

**Discharge Criteria**
- In Phase V with RS 1-4
- Observe for minimum of 2 hours after initial treatment in Phase IV/V
- Tolerating oral intake
- No supplemental oxygen (stable on RA for at least 12hrs)
- Completion of asthma education and asthma management plan
- Follow-up established

**Discharge Instructions:**
- Asthma Education packet w/ Asthma Management Plan
- Follow-up with PCP in 24-48 hours (as possible)

**PHASE Progression (Phases III-V)**
- **RS 1-4:** Advance after one treatment at this phase
- **RS 5-8:** Continue therapy at this phase
- **RS 9-12:** Step back to previous phase
- *Do not progress to next phase if pt still requires oxygen*

**RN/RT to notify MD:**
- For all phase transitions
- Failure to advance on pathway after 3 hours on continuous albuterol or after 12 hours in all other phases

**Signs of Clinical Deterioration:**
- Drowsiness, confusion, silent chest exam, hypercapnia

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Asthma v.6.2: Appropriate Use of the Pathway

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Do you anticipate that your patient will score reliably?

**Phase Change by Respiratory Score**
- This is the standard
- Your patient will be scored by the RN, RT, +/- MD and advanced by protocol

**Phase Change by Physician Assessment and Order Only**
- The MD is expected to assess the patient every 1-3 hours while in phase 2 & 3
- Please discuss the use of this order with RN & RT prior to use as it represents a deviation from the standard of care

Phase Change by Physician Assessment & Order Only
- Scoring by RN, RT & MD
- MD to assess pt every 1-3 hrs

Conditions in which this is appropriate:
- Patient transferred from ICU
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- Medical comorbidity (e.g. morbid obesity)
How are patients scored using the tool?

The respiratory scoring tool consists of four elements that make up the respiratory assessment of the patient in distress. You assess each component distinctly and add them to make a total between 1-12.

- A patient’s RR is 1-3 whereas all other categories are scored 0-3
- The Seattle Children’s Hospital respiratory scoring tool has been validated for interobserver reliability
- There are other scoring tools that have validated such as the pulmonary score (PS), pediatric asthma severity score (PASS) and pediatric respiratory assessment measure (PRAM) but no single tool that has been adopted universally

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