

Asthma Care Map

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Care Map Symbols

Links to more information or returns to a previous page.

Start of a Care Map Segment

Decision Point

Stop and Evaluate

Care Map Step
Blue underlined text is a hyperlink

Progression of care – Patient Improving



Source Reference



Education Module



Hospital Policy



Hospital Reference



Provider Information



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Asthma Care Map

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[Quick Overview: Asthma Epidemiology, Pathophysiology, and Treatment](#)

[Asthma Care Map Dashboard](#)

Suggested Inclusion Criteria for Asthma Care Map

- Age 4-21
- Presenting with an acute asthma exacerbation
- Nurse initiation of this care path replaces the wheezing>4 protocol
- A patient less than 4 may be entered into this care map by Provider order.



This care map document does not supersede the clinical judgment of a provider regarding the care that is ultimately ordered for a given patient. Click to see full disclaimer.



[Executive Summary](#)



[Expert Panel Report 3\(EPR3\) Guidelines for diagnosis and management of Asthma- Summary Report 2007](#)



[Patient Asthma Education Booklet](#)



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Potential Reasons to Avoid Asthma Care Map

- Patients with the clinical presentation of Bronchiolitis
- Cystic Fibrosis
- Chronic lung disease
- Tracheostomy patients
- Patients with neuromuscular disease
- Immunodeficiency
- Cardiac patients



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The Pediatric Asthma Scoring Grid

Table 1. The Pediatric Asthma Score (PAS)*

Score	0	1	2
Respiratory rate			
2-3 years	≤34	35-39	≥40
4-5 years	≤30	31-35	≥36
6-12 years	≤26	27-30	≥31
>12 years	≤23	24-27	≥28
Oxygen requirements	>95% on room air	90% to 95% on room air	<90% on room air or on any oxygen
Auscultation	Normal breath sounds to end-expiratory wheeze only	Expiratory wheezing	Inspiratory and expiratory wheezing to diminished breath sounds
Retractions	None or intercostal	Intercostal & substernal	Intercostal, substernal and supraclavicular
Dyspnea	Speaks in sentences, coos and babbles	Speaks in partial sentences, short cry	Speaks in single words/short phrases/grunting
Scoring Reference			
Asthma severity	Mild	Moderate	Severe
Percent of predicted peak flow	>70%	50%-70%	<50%
Pediatric asthma score	0 - 2	3 - 6	7 - 10

* Values from each category were added to compute total PAS and designation of asthma severity.



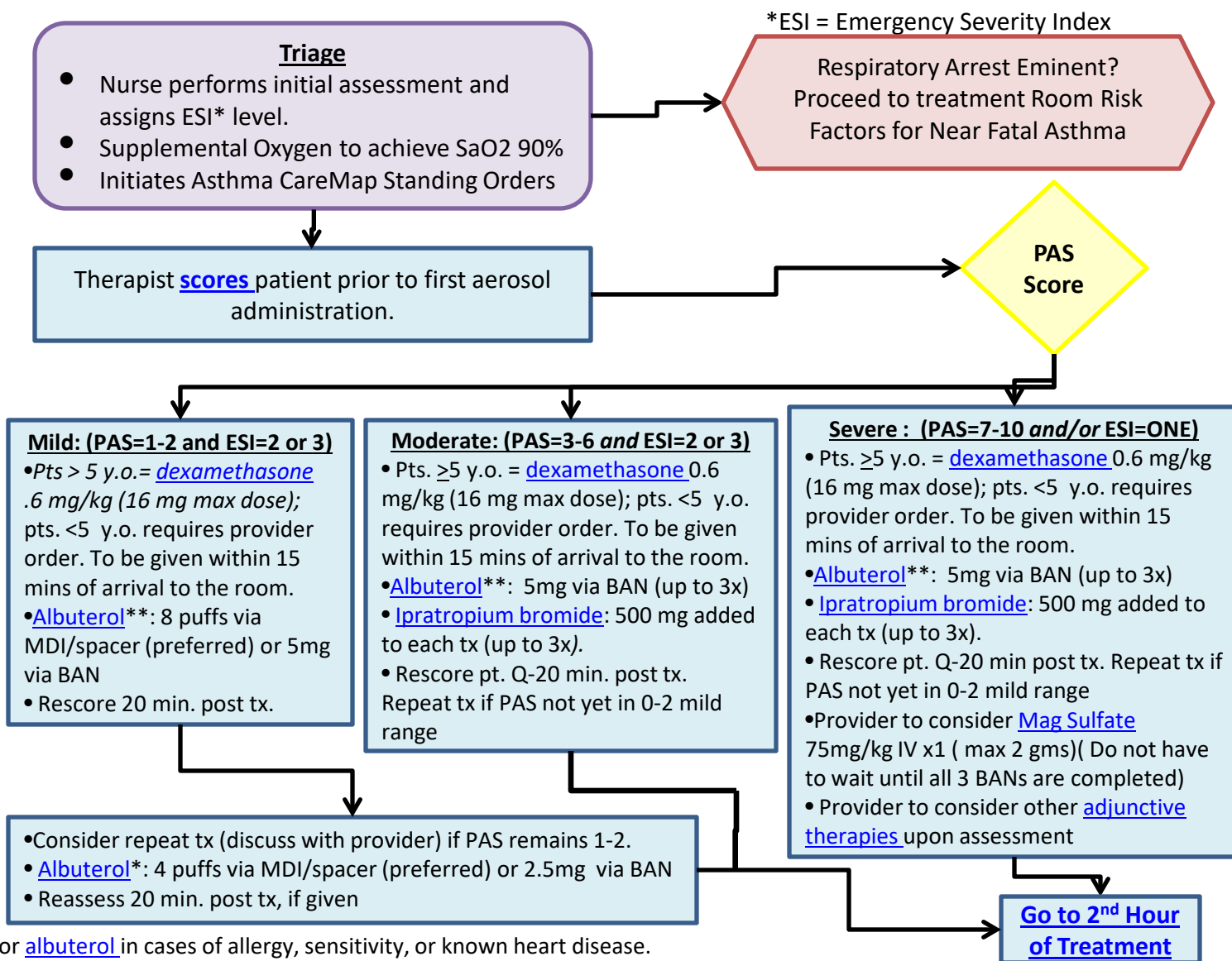
Original grid sourced from: [Qureshi F, Pestian J, Davis P, et al. N Eng J Med 1998; 339:1030-1035](#)

Emergency Department Care: Chief Complaint = Pt > 4 presents with wheezing (1st Hour)



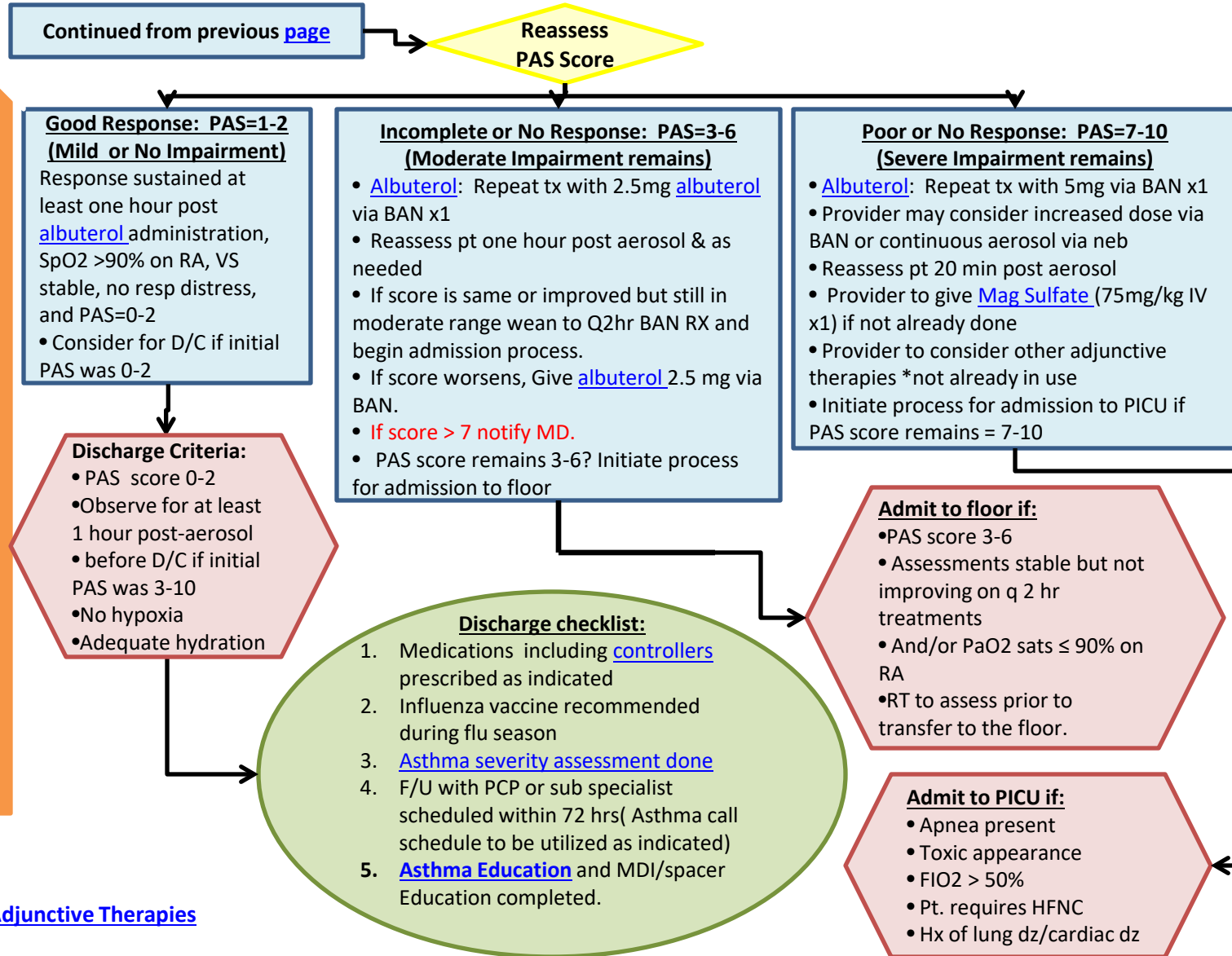
Diagnostic testing & therapies not routinely recommended:

- [CXR*](#)
- Routine arterial blood gases
- Viral testing except for Influenza
- Blood work
- Antibiotics
- [CPT](#)
- [Oral Albuterol](#)
- [Theophylline](#)



**Xopenex substituted for [albuterol](#) in cases of allergy, sensitivity, or known heart disease.

Emergency Department Care: 2nd Hour



Inpatient Care



Inpatient Assessment:
Admission History and Physical by provider and RN;
Assessment of asthma severity by provider; Asthma score by RT

Supplemental O2 to keep sats \geq 90%
 Decadron 0.6mg/kg x1 24 hrs after initial dose
Note: Pts who spend any time in PICU should complete a 5-7 day [prednisone/prednisolone](#) burst.
[Controllers](#) continued or initiated per guidelines
 Consider subspecialist consult if pt mod to severe persistent asthma.

Mild: PAS-(0-2)
 Initial [\$\beta\$ -agonist](#) RX q 3 hrs
 • [Albuterol](#) HFA 4 puffs
 • Continuous pulse OX for first 12-24 hrs.
 • DC pox if no O2 requirement.

Moderate: PAS-(3-6)
 • Initial [\$\beta\$ -agonist](#) RX q 2hrs
 - [Albuterol](#) HFA 6 puffs (preferred) or
 - [Albuterol](#) BAN 2.5 mg per Provider order
 - Once pt is weaned to q3hr, all will be switched to [albuterol](#) HFA 4 puffs
 • Continuous pulse OX for first 12-24 hrs. DC if no O2 requirement.

Severe: PAS -(7-10)
Notify Provider
 • Begin [Albuterol](#) 5mg BAN RX. May give up to 3X q20 mins if rescore not in Mod range.
 • Reassess 30 mins to 1 hr after treatments are complete.
 • If pt is still in severe range transfer to ICU.

Discharge Criteria:
 Room air, VS stable, no respiratory distress, good PO, and **beta agonist spaced to q3hrs or q4hrs** x1 with 2 hr recheck after initial spacing.
Discharge Checklist:
 1. Medications
 2. Influenza vaccine during flu season
 3. F/U with PCP or sub specialist scheduled within 72 hrs
 4. [Asthma Education](#) with [HPMC](#) and MDI/spacer education.

Reassessment & [Asthma Score](#) prior to each Rx and reassess after. [Weaning per protocol](#)

Diagnostic testing & therapies not routinely recommended:

- [CXR*](#)
- Routine arterial blood gases
- Viral testing except for Influenza
- Blood work
- Antibiotics
- [CPT](#)
- [Oral Albuterol](#)
- [Theophylline](#)

Respiratory Assessment Frequency

1. Initial frequency of patient assessments shall be twice the frequency of ordered treatments. Assessment frequencies may be lengthened to match the pt's bronchodilator frequency as the pts condition improves.
2. With initial weaning, the pt will be assessed no more than one hr after the omitted treatment was to have been done.

*** CXRs should only be performed if:**

- Persistent severe respiratory distress (including O2 sats < than 90%) OR focal findings (including localized crackles, decreased BS +/- , documented fever > 100.4 not improving on > 12 hours of therapy.
- Concern for pneumomediastinum/pneumothorax (significant chest pain, crepitus, or unilateral absence of breath sounds) during ED treatment .

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Inpatient Asthma Education

- What is Asthma?
- Medication use
- Review and demonstration of inhaler techniques
- Environmental Control Measures including smoking cessation (Triggers)
- Review of Asthma Home Management Plan of Care
- Asthma well care : Importance of F/U

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- What is asthma?
- Medication management, roles and techniques
- Home management plan of care: Early signs of an attack and signs of a breathing emergency
- Importance of follow up/ asthma well care.

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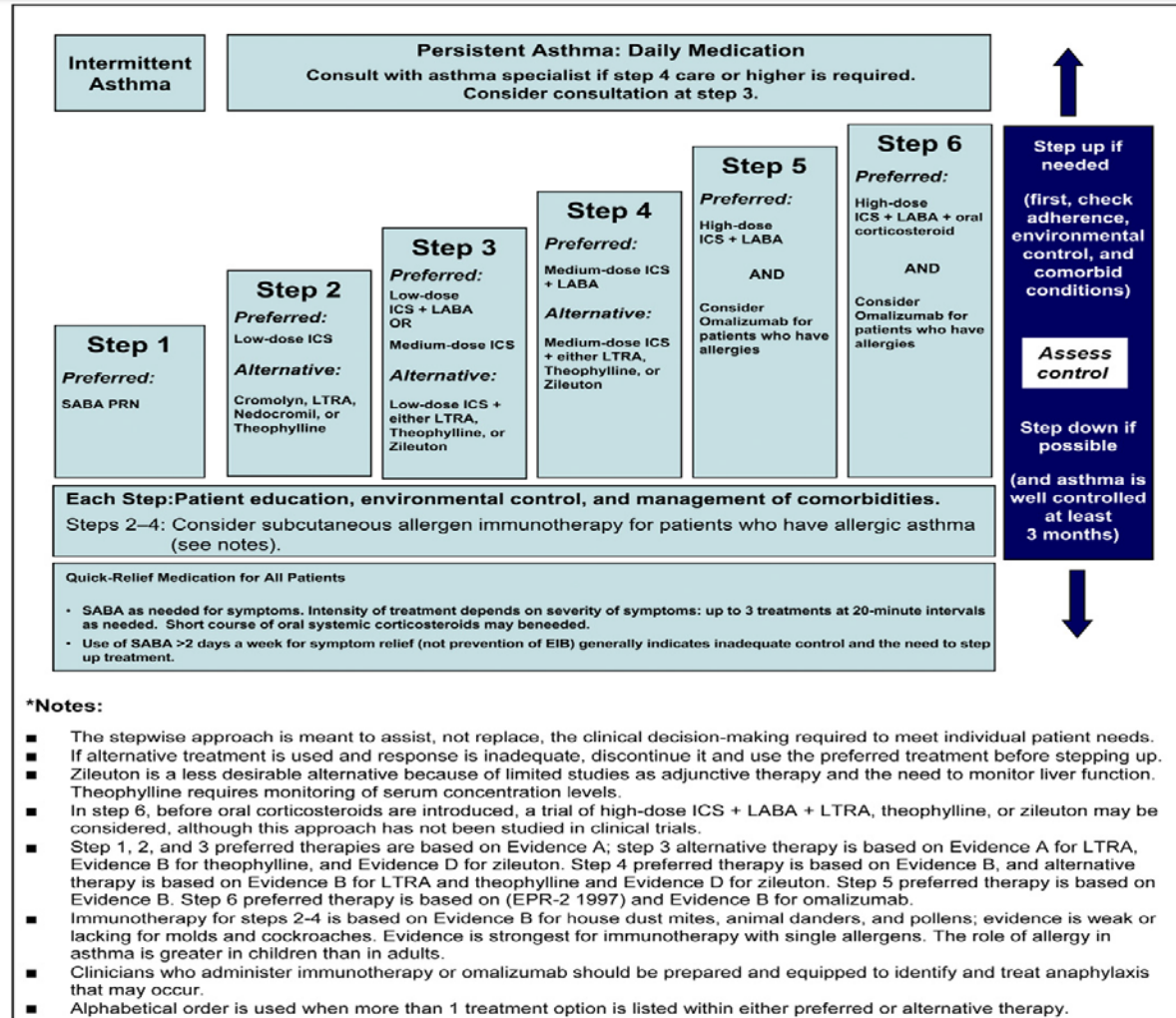
ED Canned Text DC Instructions

ED Asthma Discharge Instructions

1. You have been given our Asthma Education Booklet. Please take a moment to read about the important triggers to avoid in children with asthma.
2. Please continue your child's asthma and allergy medications as prescribed. It is important to use the reliever medication (albuterol) every 4-6 hours until you have your follow up appointment. You may use it every 2 hours if necessary. However, if you have to use the reliever medication more than twice every two hours or at more frequent intervals, please call your doctor right away.
3. It is very important that you see (PCP or Asthma doctor on call) at (date and time within 72 hours of the ED visit) for follow up on your child's asthma.

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Step Up Therapy



Original grid sourced from: [Asthma Step Up Therapy](#)

Asthma Severity Assessment

Symptoms (0-4)	<=2 days/week	>2 days/week but not daily	Daily	Throughout the day
Nighttime awakenings (0-4)	0	1-2x/month	3-4x/month	>1x/week
Short-acting B-agonist use for symptom control (0-4)	<=2 days/week	>2 days/week but not daily	Daily	Several times per day
Interference with normal activity (0-4)	None	Minor limitation	Some limitation	Extremely limited
Exacerbations Requiring Oral Systemic Corticosteroids (0-4)	0-1 year	>=2 Exacerbations in 6m requiring oral corticosteroids ...		
Asthma Severity	>=2 Exacer in 6m (Severe) ...			



Original grid sourced from: [Assessing Severity and Initiating Treatment](#)

Inpatient Admission Order Set

Adm - Asthma
 **Warning: Medication doses may calculate to a greater amount than the maximum dose, depending on the patie...

Asthma Admission Order

Quality Indicators
 CMS/TJC Quality Indicators:
 o Home management care plan should be provided including: arrangements for follow-up care, trigger control, m...
 PQRI Quality Indicators:
 o Long-term control medication (inhaled corticosteroid) or an acceptable alternative should be prescribed in patients with a diagnosis of mild, moderate, or severe persistent asthma

Admit to
 Inpatient
 Observation
 Outpatient
 Please document additional diagnosis within the problem list

Isolation
 Per Policy
 * Type of Isolation
 New Thu Aug 11 14:22
 Per Policy

Condition
 Condition
 Critical
 Fair
 Good
 Serious
 Stable

Diet
 Diet For Age (Provider Only)
 Cardiac/Apnea Monitor
 Per Policy

Education (Asthma)
 Yes
 New Thu Aug 11 14:22
 Asthma Home Management Plan of Care
 Yes
 New Thu Aug 11 14:22
 Please send patient home with the Home Management Plan of Care.

Notify Provider
 Yes

Additional Orders
 Yes

Respiratory Therapies
 Oxygen
 Yes
 New Thu Aug 11 14:22
 Comment/special instructions
 Please keep sats > 90% and wean as toler protocol
 Please keep oxygen sats > 90% wean as tolerated

Pulse Oximeter
 Continuous
 New Thu Aug 11 14:22
 Once patient is on room air for 2 hours, discontinue continuous monitoring and perform spot checks as needed ...

Mild Asthma
 Protocol (Asthma Weaning)
 Yes
 Please enter the patient on the Asthma weaning protocol.
 Mild: Initial therapy to be Q3 hours.

Moderate to Severe Asthma
 Protocol (Asthma Weaning)
 Yes
 New Thu Aug 11 14:22
 Please enter the patient on the Asthma weaning protocol.
 Moderate to Severe: Initial therapy to be Q2 hours.

Medications
Bronchodilators
 Please use a spacer as needed with inhalers.
 Albuterol Inhaler [Ventolin HFA]
 See Dose Instructions UNIT INH PER PROTOCOL in... SCH

Radiology
 Chest radiographs are not routinely necessary for children who are admitted to the hospital with acute asthma e... warranted in patients with acute worsening of clinical status or lack of response to asthma therapy. (UpToDate)
 XR CHEST PA/AP AND LATERAL
 Routine
 Outside CD
 Yes

Consultations
 Physician Consult
 Yes
 Social Work Consult
 Yes

Discharge
 Followup Appointment
 Yes
 New Thu Aug 11 14:22
 * Comment
 Follow-up within 5 days of admission
 Notify Provider
 Yes
 New Thu Aug 11 14:22
 * Comment
 Contact provider when patient meets D/C criteria
 Discharge Criteria
 Yes
 New Thu Aug 11 14:22
 * Discharge Criteria
 Discharge Criteria: Room air, VS stable, no respiratory distress, good PO, and beta agonist spaced to q4hrs x1 with 2 hr recheck after initial spacing. After MD notification and confirmation please send MDIs to pharmacy for relabeling.
 Discharge Criteria: Room air, VS stable, no respiratory distress, good PO, and beta agonist spaced to q4hrs x1 ... After MD notification and confirmation please send MDIs to pharmacy for relabeling.

Admission H & P

PCP HPI PMH/FH/SH ROS PE LCP Plan Time

***Asthma H&P**

- History of Present Illness

- History of Present Illness

History of Present Illness

Prior Treatment

Albuterol
 Continuous Albuterol
Steroids

Atrovent
Mg Sulfate
O2 Requirement

Other

Triggers

Viral Resp Infections
 Irritants

Environmental Allergens
Weather

Exercise
Other

Acute Medications

Aerosolized Therapies - Drugs and Dosage Recommendations Aerosolized Therapies			
Inhaled Short-Acting Beta2-Agonists (SABA)	Child	Adolescent	Notes
Albuterol			
Nebulizer Solution or BAN	5 mg every 20 minutes for 3 doses, then 2.5 to 5 mg every 1 to 4 hours as needed 0.5 mg/kg/hour by continuous nebulization (Dosage is based on score)	5 mg every 20 minutes for 3 doses, then 2.5 to 10 mg every 1 to 4 hours as needed, or 10 to 15 mg/hour continuously(Dosage is based on score)	Most effective delivery system is BAN for aerosol. May mix with ipratropium nebulizer solution.
MDI (90 mcg/puff)	6 puffs (range: 4 to 8 puffs) every 20 minutes for 3 doses, then every 1 to 4 hours as needed (per care map)	6 puffs (range: 4 to 8 puffs) every 20 minutes for 3 doses, then every 1 to 4 hours as needed	In mild to moderate exacerbations, MDI plus VHC) is as effective as nebulized therapy with appropriate administration technique. Add mask in children unable to manage an MDI device. Preferred for Mild ED patients and subsequent therapy for moderate patients needing admission.
Levalbuterol (R-albuterol) Nebulizer solution (0.31 mg/3 mL, 0.63 mg/3 mL, 1.25 mg/0.5mL, 1.25 mg/3 mL)	0.075 mg/kg (minimum dose 1.25 mg) every 20 minutes for 3 doses, then 0.075 to 0.15 mg/kg (not to exceed 2.5 mg) every 1 to 4 hours as needed	1.25 to 2.5 mg every 20 minutes for 3 doses, then 1.25 to 5 mg every 1 to 4 hours as needed	See Recommendation of CareMap regarding levalbuterol.
Anticholinergics in combination with Short-Acting Beta2-Agonist (SABA)			
Ipratropium bromide			
Nebulizer solution (500 mcg/2.5mL)	500 mcg with first 3 doses of albuterol, not to exceed 1500 mcg in the first hour of treatment	500 mcg with first 3 doses of albuterol, not to exceed 1500 mcg in the first hour of treatment	Add to SABA therapy for children with moderate and severe exacerbations.
MDI (18 mcg/puff)	4 to 8 puffs every 20 minutes as needed up to 3 hours	8 puffs every 20 minutes as needed up to 3 hours	Current formulation (HFA) is safe for persons with peanut allergy.
Ipratropium bromide with albuterol			
Nebulizer solution (Each 3 mL vial contains 0.5 mg ipratropium bromide and 2.5 mg albuterol)	1.5 mL every 20 minutes for 3 doses	3 mL every 20 minutes for 3 doses	Ipratropium is not necessary as first line therapy in children with mild exacerbations. Add ipratropium to SABA therapy for children with moderate and severe exacerbations. Once the child is hospitalized, further use of ipratropium has not been shown to provide significant benefit.

Corticosteroids

Corticosteroids - Drugs and Dosage Recommendations Systemic Corticosteroids		
Prednisone Prednisolone	1 mg/kg once daily (maximum 60 mg/day) for a total of 5 days Dosages in excess of 1mg/kg of prednisone or prednisolone have been associated with adverse behavioral effects in children, whereas 1mg/kg provides equivalent pulmonary benefit with decreased adverse effects	
Methylprednisolone (sodium succinate)	Loading dose of 2mg/kg x1 then 1 mg/kg q6-12 hours until patient can be transitioned to oral.	IV methylprednisolone is not recommended for routine use. Dexamethasone is the preferred therapy in the ED,
Dexamethasone	Oral: 0.6 mg/kg once (max 16 mg/dose) May repeat in 24-48 once. For Intramuscular (dexamethasone sodium phosphate): 0.6 mg/kg single dose (max 15 mg) (Gordon 2007 [2a])	Repeat dose is not needed for mild exacerbation. Repeat for Moderate and those patients admitted to hospital
<p>Patients who spend any time in ICU should receive prednisolone/prednisone burst. No advantage has been found for higher dose corticosteroids in severe asthma exacerbations. There is no advantage for intravenous administration over oral therapy, provided gastrointestinal function is intact. Therapy following a hospitalization or ED visit is typically 5 days, but may last from 3 to 10 days. Studies indicate there is no need to taper the systemic corticosteroid dose when given up to 10 days. Any previous IV doses may be considered as part of the total steroid dose.</p>		

Adjunctive Therapies

Adjunctive Therapies - Drugs and Dosage Recommendations			
Magnesium Sulfate Intravenous (IV)	Bolus: 75 mg/kg/dose (max 2 gms) Administer over 20 minutes. Give with a 20 ml/kg NS bolus		There is insufficient evidence regarding the benefit from continuous infusion of Magnesium Sulfate (Mohammed 2007 [1a]).
Systemic (injected) Beta2-Agonists			
Epinephrine Intramuscular (IM) 1:1,000 (1 mg/mL)	0.01 mg/kg (max 0.3 to 0.5 mg) every 20 minutes for 3 doses	0.3 to 0.5 mg every 20 minutes for 3 doses	One small study demonstrated more rapid absorption and higher plasma levels of epinephrine when administered intramuscularly into the thigh compared to subcutaneously or intramuscularly into the arm (up to 4 times faster). Use only in setting of severe respiratory distress/wheezing in association with anaphylaxis.
Terbutaline Intravenous (IV) or Subcutaneous (SQ) (1 mg/mL)	0.01 mg/kg bolus (max 0.4 mg) Over 10 minutes 0.01 mg/kg (max 0.25 mg) May repeat every 15 minutes for 3 doses 0.01 mg/kg bolus (max 0.75 mg) Over 10 minutes 0.01 mg/kg (max 0.25 mg) May repeat every 15 minutes for 3 doses		Starting continuous infusion dose in the ED or PICU settings: 1 mcg/kg/minute Infusion: 0.3-0.5 mcg/kg/min
Other			
Heliox (80/20 or 70/30)	Heliox driven continuous nebulized albuterol has potential to increase particle delivery and improve work of breathing with minimal side effects. <ul style="list-style-type: none"> ED and ICU use only 		
Ketamine IV	Bolus: 1 mg/kg over 15 minutes Infusion: 12.5 mcg/kg/minute		

Long Term Asthma Controllers

- Inhaled Corticosteroids
- Leukotriene receptor agonist
- Long Acting Beta Agonist
- Combined inhaled glucocorticosteroids and LABAs
- Chromenes
- Theophylline
- Zileuton

Home Management Plan of Care




Date: 07/28/16
 Acct Num: E000001370
 Med Rec Num: M000000126
 Name: Tonia Coomer Test
 Location: 3rd Floor West - Medical
 Primary Provider: Lightyear, Buzz



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 Location: 3rd Floor West - Medical
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Asthma Home Care Plan

*This information is to be followed after the current illness is over.
 *All inhalers must be taken with a spacer or holding chamber!
 *Brush teeth after using controller medicine.
 *Pre-treat with rescue medicine 10-15 minutes before exercise or contact with triggers.




*****GREEN ZONE*****

Green means Go!

Breathing is Good
 No Cough or Wheeze
 Can Work and Play

Take controller medicine every day even if symptoms stop:

Controller Medicine:		
Singularlir:	4mg	By Mouth Once Daily at Bedtime
Qvar:	80mcg:	2 Puffs Once Daily at Bedtime
Zyrtec:	10mg	By Mouth Every Morning
Nasonex:	1	Spray in Each Nostril Twice Daily



*****YELLOW ZONE*****

Yellow means Slow!


Cough
 Wheeze
 Tight Chest
 Wakes up at night/sleeps less well than usual

Continue to take controller medicine as above
 AND

Add rescue medicine as follows:

Medication Name	Dose	Frequency
Albuterol	MDI with spacer 2-4 puffs	Every 4-6 hours
OR		
Albuterol	1 vial in nebulizer	Every 4-6 hours

****If not better in 20 minutes or if rescue medicines needed more than every 4 hours, go to the RED ZONE and call your doctor****



*****RED ZONE*****

Red means Stop!

Medicine Not Helping
 Breathing is Hard and Fast
 Nasal Flaring
 Can't Walk
 Retractions
 Can't Talk Well

****DANGER: Follow these steps!****

Take rescue medicine immediately and call doctor
 If skin color changes or lips turn blue, "CALL 911" while repeating rescue medicine
 Repeat rescue medicine while waiting for 911 to arrive, or while traveling to the Emergency Room

Medication Name	Dose	Frequency
Albuterol	MDI with spacer 4 puffs with spacer	Every 20 minutes x2
OR		
Albuterol	1 Vial in nebulizer	Every 20 minutes x2

Follow up Plan:

Provider Name	Phone Number	Date/Time of Follow up Appointment
Eduardo J Riff	637-8481	8/12/16 @ 9:30am

Information on Triggers and Control Methods Given: Yes
 Copy Given to Parent/Guardian: Yes

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Physician Disclaimers: Asthma Care Map

Medical Disclaimer

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The authors of this Care Map have checked with sources believed to be the most current and reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication.

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Contact and Revisions Number

- **For questions concerning this care map, contact: CareMap@etch.com**
- **Last Update: 9/1/16**