

APPENDIX 9

SUMMARY

DECISION SUPPORT

PATIENT EDUCATION/SELF MANAGEMENT

GOAL- "CONTROL" OF SYMPTOMS

SYMPTOMS: SOB, WHEEZE, COUGH	≤ 2 DAYS/WEEK
NIGHT TIME AWAKENINGS	≤ 2 X'S/MONTH
ACTIVITY INTERFERENCE	NONE
SABA USE FOR SYMPTOM CONTROL	≤ 2 DAYS/WEEK
FEV ₁ OR PEAK FLOW	> 80% PREDICTED OR PERSONAL BEST
EXACERBATIONS REQUIRING ORAL STEROIDS	0-1/ YEAR

ALERTS

- ⇒ Losing control: ↑ symptoms, ↑ SABA use, ↓ PEF, etc.
- ⇒ SpO₂ < 92 %
- ⇒ Can't speak more than 1-2 words/ breath
- ⇒ PEF < 50% Predicted/Personal Best
- ⇒ Silent Chest, Cyanosis, Confusion or Coma.

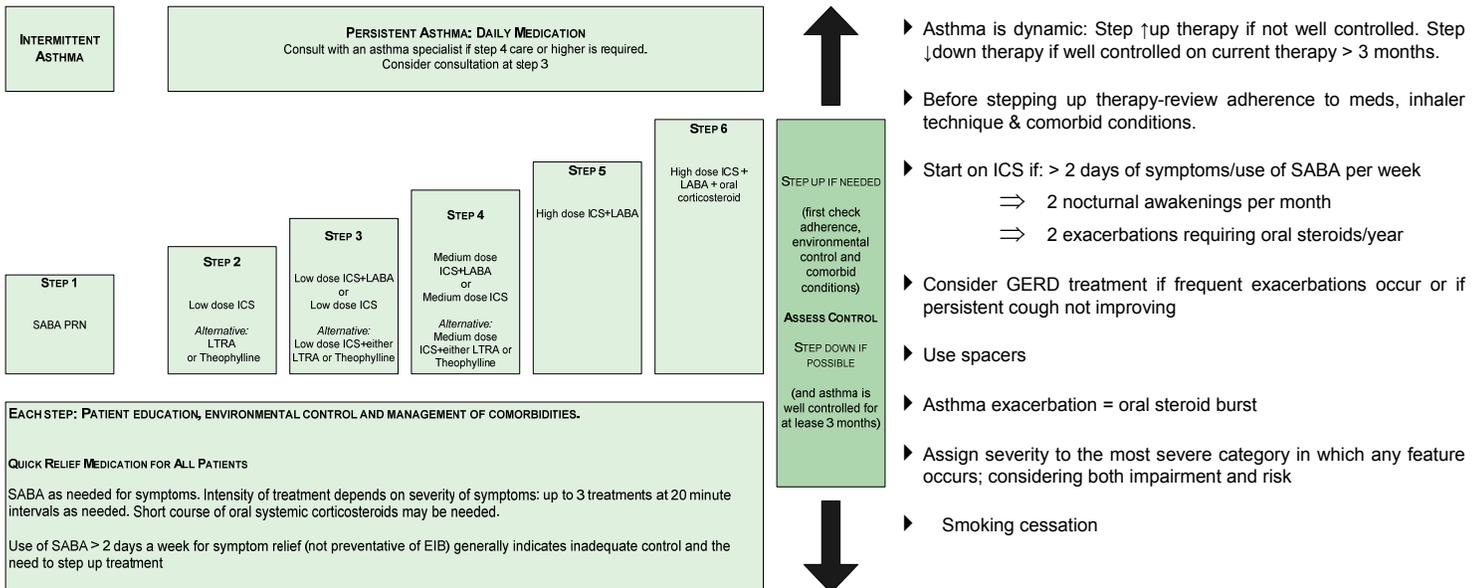
DIAGNOSTIC CRITERIA/EVALUATION- "CLASSIFY" SEVERITY

SEVERITY CLASSIFICATION	INTERMITTENT	PERSISTENT		
		MILD	MODERATE	SEVERE
SYMPTOM FREQUENCY	≤ 2 days/week	> 2 days/week but not daily	daily	throughout day
NIGHTTIME AWAKENINGS	≤ 2 x's/month	3-4 x's / month	>1x/ week but not nightly	often 7x/week
INTERFERENCE WITH NORMAL ACTIVITY	None	Minor	Some	Extreme
SPIROMETRY LUNG FUNCTION	Normal FEV ₁ between exacerbations FEV ₁ >80% predicted FEV ₁ /FVC normal	FEV ₁ > 80 predicted Normal FEV ₁ /FVC normal	FEV ₁ > 60% predicted but <80 predicted FEV ₁ /FVC reduced 5% daily	FEV ₁ <60% predicted FEV ₁ /FVC reduced > 5%

COMPLETE HISTORY INCLUDING:

- Medications, smoking hx, hospitalizations/intubations due to Asthma; known triggers; seasonal variability; vaccination hx
- Baseline spirometry
- Exam including heart and lung, peak flow, complete vitals (BP, P, RR, O₂Sat, T, Ht/Wt)
- Consider differential diagnosis: other pulmonary diseases, cardiac disease, infectious diseases, etc

TREATMENT OPTIONS- "CORTICOSTEROIDS" TO TREAT



MONITORING

- If patient is at therapeutic goal on 2 consecutive encounters, patient may be seen up to every 180 days
- If not at treatment goal, use clinical judgment for monitoring timeframe.
- If recent exacerbation, follow closely until patient clinically improved.

Definition of Terms: SABA - short acting beta agonist LABA - long acting beta agonist ICS - Inhaled Cortical Steroids EIB - Exercise Induced Bronchospasm LTRA - Leukotriene Receptor Antagonist

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Medications

MEDICATION CLASS	MEDICATION	SIDE EFFECTS	SPECIAL NOTES	FORMULARY STATUS*
INHALED CORTICAL STEROID (ICS)	fluticasone (Flovent HFA)	Headache, arthralgia, URTI, throat irritation, Oral candidiasis, Rare paradoxical bronchospasm,	Hypersensitivity to fluticasone or any component of the formulation; NOT for primary treatment of status asthmaticus or acute bronchospasm	F
	beclomethasone (QVAR)	See above	See above	NF
	mometasone (Asmanex)	See above	See above	NF
	triamcinolone (Azmacort)	See above	See above	NF
ORAL CORTICOSTEROID	Prednisone (to be used in burst fashion during exacerbation)	GI upset, Psychiatric disturbances, Bruising, Immunosuppression, Fluid retention, Hypertension	Hypersensitivity to any component of the formulation; systemic fungal infections; administration of live or live attenuated vaccines with immunosuppressive doses of prednisone	F
SHORT ACTING BETA-AGONIST (SABA)	Albuterol (Ventolin HFA, Proventil HFA, salbutamol)	Tachycardia, Palpitations, Tremor, Hyperglycemia, Hypokalemia, Lactic acidosis, Rare paradoxical bronchospasm	Hypersensitivity to albuterol, adrenergic amines, or any component of the formulation	F
	levalbuterol (Xopenex HFA)	See above	Hypersensitivity to levalbuterol, albuterol, or any component of the formulation	NF
	metaproterenol (Alupent)	See above	Hypersensitivity to metaproterenol or any component of the formulation; pre-existing cardiac arrhythmias associated with tachycardia	NF
LONG ACTING BETA AGONIST (LABA)	salmeterol (Serevent)	Headache, Neuromuscular and skeletal pain, Throat irritation, pharyngitis	Long-acting beta₂-agonists (LABAs) may increase the risk of asthma-related deaths. Salmeterol should only be used as adjuvant therapy in patients not adequately controlled on inhaled corticosteroids or whose disease requires two maintenance therapies Do NOT use for acute asthmatic symptoms Hypersensitivity to salmeterol or any component of the formulation	F
COMBINATION INHALER MEDICATIONS	fluticasone + salmeterol (Advair)	Headache, URTI, throat irritation, Oral candidiasis, Neuromuscular and skeletal pain, Menstruation symptoms	Hypersensitivity to fluticasone, salmeterol, or any component of the formulation; status asthmaticus; acute episodes of asthma or COPD; severe hypersensitivity to milk proteins (Advair Diskus®)	F
LEUKOTRIENE INHIBITORS	montelukast (singulair)	Dizziness, Headache, Fatigue, Fever, Rash	Hypersensitivity to montelukast or any component of the formulation Possible association between leukotriene inhibitor use and neuropsychiatric events including agitation, aggression, anxiousness, dream abnormalities, hallucinations, depression, insomnia, irritability, restlessness, suicidal thinking and behavior (including suicide) and tremor.	NF
OTHER ASTHMA MEDICATIONS	theophylline (Theo-Dur)	Tachycardia, Flutter, Headache, Insomnia, Restlessness, Nausea, Vomiting Tremor, Difficulty urinating in men with prostatism signs and symptoms of theophylline toxicity (eg, persistent, repetitive vomiting)	Hypersensitivity to theophylline or any component of the formulation Cardiovascular disease: Use with caution in patients with tachyarrhythmias (eg, sinus tachycardia, atrial fibrillation) since use may exacerbate these arrhythmias. Hyperthyroidism: Use with caution in patients with hyperthyroidism; use may exacerbate this condition. Peptic ulcer disease: Use with caution in patient with peptic ulcer disease; use may exacerbate this condition. Seizure disorder: Use with caution in patients with a history of seizure disorder; use may exacerbate this condition.	F
	Ipratropium (to be used with Albuterol via oxygen driven nebulizer)	URT, Bronchitis, Headache, Dyspnea,	Hypersensitivity to ipratropium, atropine (and its derivatives), or any component of the formulation	F

*Formulary Status (as of 4/6/10) - F = Formulary NF = Non Formulary

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SPECIALTY REFERRAL GUIDELINES

GENERALLY REFER PATIENT-INMATES TO PULMONOLOGIST WHO HAVE:
**** DETAILED CRITERIA CAN BE FOUND ON INTER-QUAL SMART SHEETS****

1. Asthma with complications or comorbidity (e.g. CO2 retention, recent hx of mechanical ventilation)
2. Continued asthma symptoms after maximal recommended treatment (e.g. multiple ER visits despite therapy)
3. Chronic corticosteroid use (e.g. On oral steroids > 4 weeks, or prolonged high-dose ICS used)

PEAK FLOW PREDICTED-MEN

Predicted average peak expiratory flow for normal males (L/min)

Age	Height				
	60"	65"	70"	75"	80"
20	554	602	649	693	740
25	543	590	636	679	725
30	532	577	622	664	710
35	521	565	609	651	695
40	509	552	596	636	680
45	498	540	583	622	665
50	486	527	569	607	649
55	475	515	556	593	634
60	463	502	542	578	618
65	452	490	529	564	603
70	440	477	515	550	587

These values represent average normal values within 100 L/min. Predicted values for African American and Hispanic minorities are approximately 10 percent lower.
 Redrawn from Leiner, GC, et al, *Am Rev Respir Dis* 1963; 88:644.

PEAK FLOW PREDICTED-WOMEN

Predicted average peak expiratory flow for normal females (L/min)

Age	Height				
	55"	60"	65"	70"	75"
20	390	423	460	496	529
25	385	418	454	490	523
30	380	413	448	483	516
35	375	408	442	476	509
40	370	402	436	470	502
45	365	397	430	464	495
50	360	391	424	457	488
55	355	386	418	451	482
60	350	380	412	445	475
65	345	375	406	439	468
70	340	369	400	432	461

These values represent average normal values within 80 L/min. Predicted values for African American and Hispanic minorities are approximately 10 percent lower.
 Redrawn from Leiner, GC, et al, *Am Rev Respir Dis* 1963; 88:644.

CHRONIC ASTHMA

ABBREVIATIONS:

ICS: Inhaled Corticosteroid
PEF: Peak Flow
FEV1: Forced Expiratory Volume in one second.

ASSESSMENT:

- History and Physical including PEFR.
- If needed, confirm diagnosis with spirometry.
- Patient education including nursing verification of correct inhaler technique
- Identify triggers-seasonal? URI? Fumes?

ICS Dosing: Flovent

Administer in divided doses twice daily:
 "Low" dose: 110 mcg 1 puff q day or bid
 "Medium" dose: 220 mcg 1 puff bid
 "High" dose: 220 mcg 2 puffs bid
 NIH Asthma Guidelines (NIH, 2007)

ASSIGN
SEVERITY CLASSIFICATION
 TO EACH PATIENT

INTERMITTENT:

- Symptoms ≤ 2 x / week
- Nighttime symptoms ≤ 2 x / mos
- Asymptomatic and normal PEF between exacerbations
- Brief Exacerbations (hrs to days)
- FEV1 or PEF $\geq 80\%$ predicted and variability $< 20\%$

MILD PERSISTENT:

- Symptoms ≥ 2 times / week but not daily
- Nighttime symptoms 3-4 times per month
- Exacerbations with minor limitations
- FEV1 or PEF $> 80\%$ predicted and variability 20% o 30%

MODERATE PERSISTENT:

- Daily Symptoms
- Daily use of inhaled short acting beta-2 agonist
- Nighttime symptoms > 1 per week
- Exacerbations cause some limitations
- Exacerbations may last days
- FEV1 or PEF 60% to 80% predicted and variability $> 30\%$

SEVERE PERSISTENT:

- Continual symptoms
- History of intubation or ICU admission
- ≥ 2 hospitalizations in past year
- Extreme physical limitations
- Frequent exacerbations
- Frequent nighttime symptoms
- FEV1 or PEF $< 60\%$ predicted and variability $> 30\%$

INITIAL TREATMENT RECOMMENDATIONS BASED ON SEVERITY

INTERMITTENT TREATMENT:

1. Generally no ICS, unless seasonal use needed
2. "Rescue" Albuterol 2 puffs 4 times daily PRN

MILD PERSISTENT TREATMENT:

1. Low dose ICS
2. "Rescue" Albuterol 2 puffs 4 times daily PRN

MODERATE PERSISTENT TREATMENT:

1. Medium dose ICS
2. "Rescue" Albuterol 2 puffs 4 times daily PRN

SEVERE PERSISTENT TREATMENT:

1. High dose ICS
2. "Rescue" Albuterol 2 puffs 4 times daily PRN
3. Serevent 1 puff twice daily

Controlled?

YES NO

Follow-up every 3-6 months with history and peak flow*.

Re-evaluate classification. Start ICS under Mild Persistent Treatment. Follow up every month.

Controlled?

YES NO

Follow-up every 3 months with history and peak flow*.

Re-evaluate classification. Step up ICS to Moderate Persistent Treatment. Follow-up every month.

Controlled?

YES NO

Follow-up every 2-3 months with history and peak flow*.

Re-evaluate classification. Step up ICS to Severe Persistent Treatment. Follow-up every month.

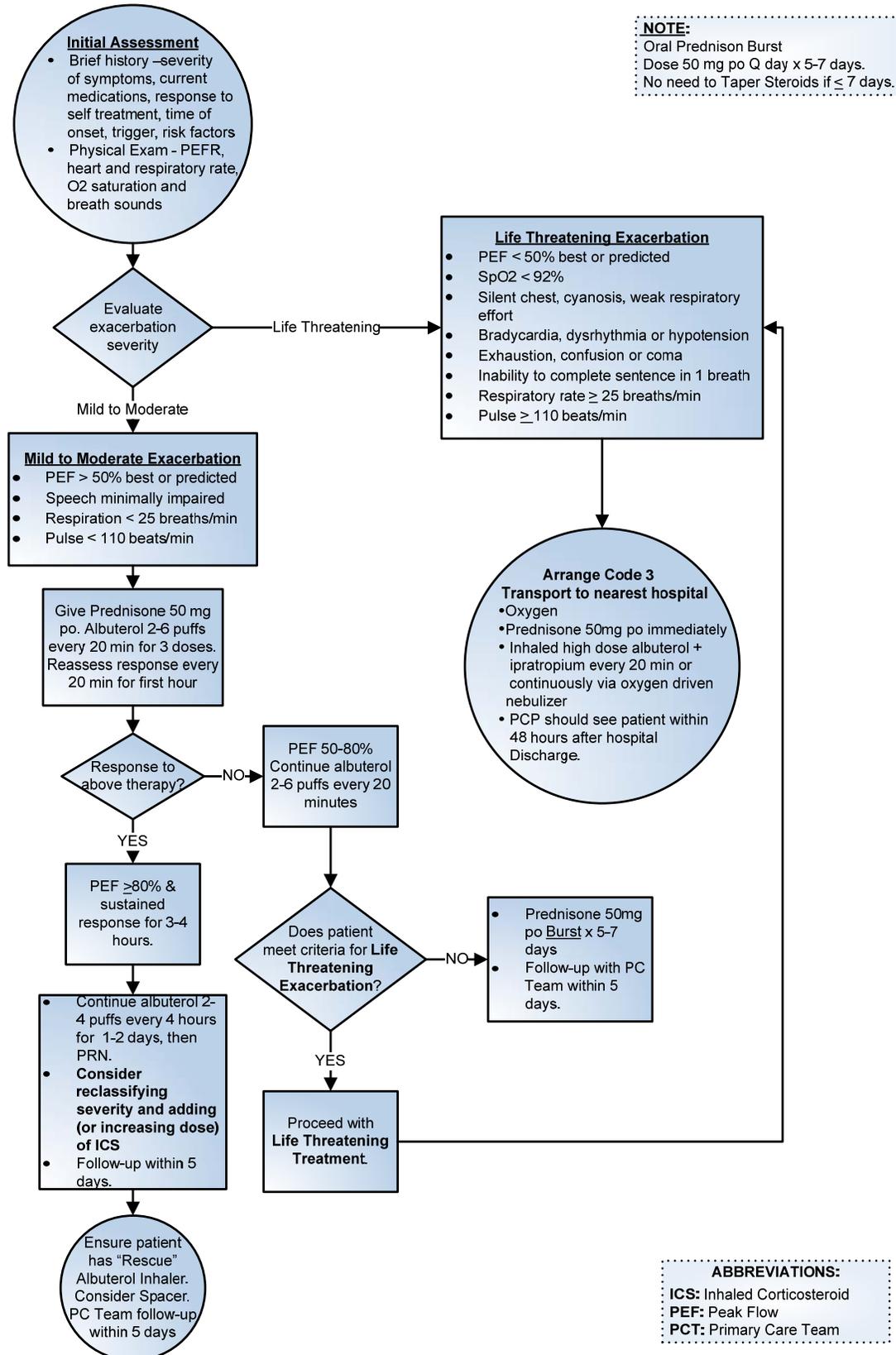
Controlled?

YES NO

Follow-up every month with history and peak flow*.

Consider longer course of oral steroids. Referral to pulmonology. Follow-up every week.

ACUTE ASTHMA



References:

National Asthma Education and Prevention Program Expert Panel Report2: Guidelines for the Diagnosis and Management of Asthma
<http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>
 NCCHC Clinical Guidelines for Correctional Facilities: Treatment of Asthma in Adults in Correctional Institutions. Apr 2006.
<http://www.ncchc.org/resources/clinicalguides/asthma.pdf>

Asthma: What You Should Know



Q: WHAT IS ASTHMA?
A: Asthma is a chronic disease that effects your airways. The airways are the tubes that carry air in and out of you lungs.

Q: WHAT ARE THE DIFFERENT KINDS OF ASTHMA?

A:	INTERMITTENT	PERSISTENT	EXERCISE RELATED
Usually you have symptoms that are off and on and mild, you generally don't need a "controller" inhaler. You may occasionally need to use a "rescue" inhaler.	Means you have more frequent and worse symptoms, you do need a "controller" inhaler to reduce the number and severity of your symptoms.	Some people only have asthma symptoms when they exercise. These people will often use the "rescue" inhaler before exercise.	

Q: WHAT CAUSES ASTHMA?
A: There are different causes:

- Asthma can run in families
- Asthma is much more common in people with allergies
- Pollution can cause asthma or make it worse
- Exposure to certain viruses as a child increases the chance you will get asthma.

Q: WHAT ARE THE SYMPTOMS OF ASTHMA?
A: When you have asthma you may:

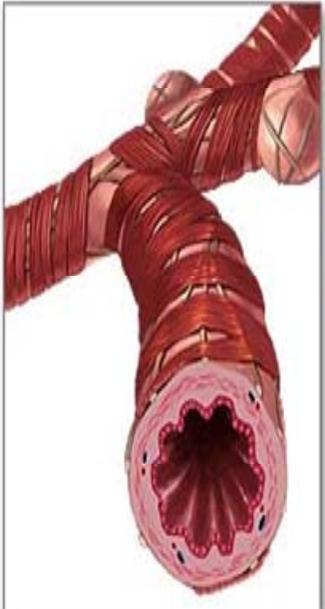
- Wheeze-making a loud or soft whistling noise that occurs when you breathe in and out.
- Cough a lot
- Feel short of breath
- Have trouble sleeping because of coughing or having a hard time breathing
- Quickly get tired during exercise
- You may notice symptoms can be worse at night

Q: HOW IS ASTHMA DIAGNOSED?
A: Along with asking you about your medical history and examining you, your provider may order lung tests. These tests include:

- **Peak expiratory flow (PEF):** You breathe quickly into a small handheld plastic device which measures how fast you can breathe out when you try your hardest and the number can tell if your asthma is better or worse.
- **Spirometry:** you breathe into a small machine to measure how quickly you can move air in and out of your lungs and how much air you move

Q: HOW IS ASTHMA TREATED?

Normal bronchiole



Asthmatic bronchiole



A: ASTHMA ACTS ON YOUR LUNGS IN TWO WAYS:

Asthma causes the tiny muscles around your airways to tighten which constricts the airways and makes breathing more difficult.

- This can happen fast, but can also get better fast using a "quick relief", "rescue" or "opener" (bronchodilator) inhaler
- You should only need this type of inhaler once in a while. If you are using it daily see your PCP
- Names of some "quick relief" inhalers: **albuterol**, proventil

Asthma also causes long term swelling inside the airways. This swelling narrows the airway and makes breathing more difficult.

- The swelling is present most of the time, but a "controller" inhaler can keep the swelling down and keep your airways open. Most controllers are low dose steroid inhalers which prevent the swelling
- In most cases you use a controller inhaler every day, because if you stop the swelling will come back.
- Names of some of the steroid/controller inhalers include: **Flovent**, QVAR, Asmanex

Asthma: What You Should Do



WHAT TYPE OF ASTHMA DO YOU HAVE? (CHECK ONE)

INTERMITTENT	MILD PERSISTENT	MODERATE OR SEVERE PERSISTENT	EXERCISE RELATED
Means you have asthma symptoms less than 2 times a week. Asthma does not interfere with your normal activity.	Means you have asthma symptoms more than 2 days a week but not everyday and your asthma affects your usual activity only a little.	Means you have symptoms everyday. Your asthma interferes or prevents your normal activity	Means you only have asthma symptoms when you exercise.

WHAT TYPE OF MEDICATION ARE YOU TAKING? (CHECK ONE)

QUICK RELIEF/OPENER	CONTROLLER MEDICATION	OTHER
 <p><input type="checkbox"/> Albuterol : _____ <input type="checkbox"/> Other: _____</p> <p>Relax the tight muscles surrounding the airways and "open" the airways up. They help for a short time usually for 1-4 hours.</p> <p>Dose: _____ Directions: _____</p> <p>!!Warning: If you are using more than 2 times per week you need to schedule an appointment with your Primary Care Provider.</p>	 <p><input type="checkbox"/> Flovent: _____ <input type="checkbox"/> Other _____</p> <p>These inhalers prevent inflammation and swelling in the airways. These inhalers take 3-7 days to work so you must take every day. These inhalers will not help in an attack.</p>	<p><input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____</p>

TO AVOID ASTHMA ATTACKS

- ✓ Don't Smoke 
- ✓ Be on the look out for what brings on (triggers) your asthma and avoid if possible:
 •Weather •Strong emotions •Exercise •Colds/lung infections

WHAT TO DO DURING AN ATTACK

1. Take your "rescue" inhaler immediately
2. Sit down and loosen any tight fitting clothing. Do not lie down.
3. If no immediate improvement during an attack, continue to take one puff of your "rescue" inhaler every minute for five minutes or until symptoms improve.
4. If your symptoms do not improve in five minutes seek medical attention **IMMEDIATELY**.

TO KEEP YOUR INHALER CLEAN

CLEANING:

- Once a day clean the inhaler and cap by rinsing them in warm running water. Let the inhaler dry before you use it again.
- Twice a week wash the plastic mouthpiece with mild dishwashing soap and warm water. Rinse and dry well.

HELPFUL HINTS

- Keep your rescue inhaler with you at all times. If you are going into an area where security concern may prevent you from keeping your rescue inhaler with you, leave meds with the custody staff that is in charge of that area. Inform them you may need your medication right away if a flare should occur.
- Plan ahead and refill prescriptions before they run out.
- If you are using your "rescue" medication too often, your asthma is getting worse. This can lead to permanent scarring of your breathing tubes or even death. Contact medical staff right away.
- Being depressed or anxious can make your asthma worse. Talk with your provider if you are experiencing symptoms of depression or anxiety.
- Stay well. Reduce your risk of colds and flu-which can trigger your asthma-by washing your hands often and getting a flu shot every year.
- Remember, a big part of your asthma control depends on you. The medical staff is available to help you but you must do your part to help them give you the best care possible.

SUMMARY DECISION SUPPORT PATIENT EDUCATION/SELF MANAGEMENT

ASTHMA ACTION PLAN FOR:

		MEDICINE	HOW MUCH TO TAKE	WHEN TO TAKE IT		
				Daily	As needed	
<p>DOING WELL In the Green Zone</p> 	<ul style="list-style-type: none"> No trouble breathing Can do usual activities <p>And, if peak flow meter is used: Peak flow: more than _____ (80 percent or more of my best peak flow)</p>	<p>Rescue/Opener:</p> <p>Controller:</p> <p>Other:</p>		Daily	As needed	
	<ul style="list-style-type: none"> Cough, wheeze, chest tightness, or shortness of breath, or Waking at night due to asthma, or Can do some, but not all usual activities <p>Or</p> <p>Peak Flow: _____ to _____ (50 to 79 percent of my best peak flow)</p>	<p>1. Continue the medication in the doing well/green zone</p> <p>2. Use Rescue/Opener medicine: <input type="checkbox"/> 2 or <input type="checkbox"/> 4 puffs, every 20 minutes for up to 1 hour</p> <p>3. If you feel back to normal (an peak flow improved) after 1 hour:</p> <p>Continue monitoring to be sure you stay in the green zone.</p> <p>Or</p> <p>If you do not feel back to normal after 1 hour with above treatment:</p> <p>Take: _____</p> <p>Contact Medical if: _____</p>			Daily	
	<ul style="list-style-type: none"> Very short of breath, or Quick-relief medicines have not helped, or Cannot do usual activities, or Symptoms are same or get worse after 24 hours in Yellow Zone <p>Or Peak flow: _____ less than _____ (50 percent of my best peak flow)</p>	<p>1. Use Rescue/Opener medicine</p> <p>2. Start prednisone pills immediately _____mg</p> <p>3. CONTACT MEDICAL/CUSTODY TO BE SEEN IMMEDIATELY.</p>				

PLAN PREPARED BY: _____ PCP/NP/RN

CPHCS ASTHMA QUALITY OF CARE REVIEW*

Reviewer: _____ **Date of Review:** _____
Patient Name: _____ **CDCR #** _____ **DOB:** _____
PCP: _____ **Date(s) of Visit(s):** _____

1.) Does the clinical history include relevant information? <ul style="list-style-type: none"> • Current complaints-symptoms (wheezing, SOB, cough, etc)? If symptomatic is there documentation on interference with activities, night time awakening, & frequency of SABA used? • Current medications? Adherence to medications? Number of canisters used? • If new patient was prior h/o hospitalizations, intubations, and steroid use obtained? 	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.) Does the focused clinical exam give relevant details? <ul style="list-style-type: none"> • Peak expiratory flow (PEF) and oxygen saturation recorded for symptomatic patients? Abnormal vital signs noted? • Chest exam, accessory muscles needed, can't speak full sentence, skin color? 	<input type="checkbox"/> Yes <input type="checkbox"/> No
3.) Is the asthma assessment complete? <ul style="list-style-type: none"> • Was the asthma severity classification & degree of control documented? • If classified as intermittent but SABA use > 2x/wk, does provider consider reclassification to persistent? • Does the severity and degree of control documented accurately reflect the subjective and objective findings? Were red flags identified? (PEF < 25% best or predicted, ↑↑ SABA use, O2 < 92%) • When indicated were co-morbidities or differential diagnoses considered? (i.e. CHF) 	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.) Is the asthma treatment plan appropriate? <ul style="list-style-type: none"> • If patient had asthma exacerbation were oral steroids prescribed? • If persistent asthma, is patient on an inhaled corticosteroid (ICS)? Spacer? • If SABA used > 2x/wk does provider change treatment? If not, is explanation provided? • If classified persistent asthma and control is poor (Symptoms > 2x/wk), does provider 'step up' the treatment by increasing dose of ICS and/or adding LABA? • Is follow-up interval appropriate relevant to degree of control? • Was referral to specialist made when indicated? (i.e. continued sx despite maximal treatment, chronic oral steroid use, recent intubation or CO2 retention). • If diagnosis in doubt was spirometry ordered? 	<input type="checkbox"/> Yes <input type="checkbox"/> No
5.) Is there documentation of patient education? <ul style="list-style-type: none"> • Instructions on importance of ICS use, and the difference between Quick Relief and Controller medication? • Medication adherence? • Inhaler technique reviewed by Primary Care Team member in last 12 months? 	<input type="checkbox"/> Yes <input type="checkbox"/> No

RECOMMENDATIONS/COMMENTS:

LABA: Long acting beta agonist; SABA Short acting beta agonist

*All elements in the each domain are suggestions for good documentation, not requirements.

Use clinical judgment when reviewing the documentation

Patient disease severity and corresponding management should be clear to the reviewer, in all documentation.

Please consider the elements in this review tool when completing Access Measure Audit Tool.