

# Management of Acute Loss of Asthma Control: The Yellow Zone

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## ABSTRACT

Nurse practitioners (NPs) are at the frontline of treating asthma patients in primary, specialty, and acute care and work closely with those patients to optimize their outcome. The NP's care of a patient with asthma includes both preventive management and acute treatment. Overcoming the challenges of maintaining long-term asthma control and addressing episodes of loss of acute control require an individualized approach to patient care. In view of the importance of quickly and effectively treating any acute loss of control to prevent further sequelae, this investigation addresses related management options and offer evidence-based treatment considerations for NPs.

**Keywords:** asthma, asthma control, asthma symptoms, yellow zone asthma

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Nurse Practitioners (NP) lead clinical efforts in primary, specialty, and acute care and work closely with patients to optimize their outcomes. Both prospective and observational studies have shown that NPs are key primary providers and educators in the management of chronic conditions such as asthma.<sup>1,2</sup> In 2007, the National Heart, Lung, and Blood Institute's (NHLBI) National Asthma Education and Prevention Program (NAEPP) published the Expert Panel Report 3 (EPR3) guidelines that defined asthma *severity* as the intrinsic intensity of the disease process and asthma *control* as the degree to which the goals of therapy are met (eg, prevent symptoms/exacerbations, maintain normal lung function and activity levels).<sup>3</sup> While the NAEPP is in process of updating their asthma guidelines, the EPR3 remains the "gold standard" in the United States for evidence-based asthma care. The NAEPP EPR3 states that a patient's level of asthma *severity* is to be identified upon initial diagnosis and, thereafter, the focus of treatment is on the patient's level of asthma *control*. As a part of these guidelines, a stepwise treatment algorithm is used to address symptom variability and corresponds to each level of *severity* or *control*.

The NP's care of a patient with asthma includes both preventive management and acute treatment.

Overcoming the challenges of maintaining long-term control and addressing episodes of acute control loss require an individualized approach to patient care. Because of the importance of quickly and effectively treating any acute loss of control to prevent further sequelae, this study discusses related management options and offers evidence-based treatment considerations for NPs.

## ASTHMA SELF-MANAGEMENT AND ASTHMA ACTION PLANS

According to the EPR3, asthma control is a realistic goal by virtue of the avoidance of triggers, patient adherence to prescribed controller/maintenance therapy, and the patient's ability to recognize asthma symptoms and respond appropriately.<sup>3</sup> Other than the prescribing of medications, all asthma care components require patient involvement to oversee, recognize, and react to asthma symptoms. Patient education is the forte of NPs and its purpose is to assist the patient in: (1) advancing their knowledge and skills to know when asthma is worsening; (2) taking appropriate action and their prescribed medications; and (3) avoiding known triggers. As with any chronic condition, asthma self-management is the key to successful health outcomes.<sup>4</sup>

A favorite tool used when discussing asthma self-management with patients is the asthma action plan (AAP). The AAP can be completed once a patient's baseline control has been established and is best done in partnership with the patient. With the aid of the AAP, the NP can teach the patient how to recognize and manage an acute loss of asthma control that may occur outside of a medical setting. AAPs are designed in a color-coded fashion, similar to a traffic light (see Figure 1). Despite some individual differences, AAPs delineate 3 zones of treatment intervention in keeping with the green, yellow, and red lights of a traffic signal. The green zone (GZ) is defined by the patient's asthma being well-controlled. The yellow zone (YZ) is defined by the patient experiencing an acute loss of asthma

control and treatment intervention is needed. The red zone (RZ) is defined by the patient having an asthma exacerbation and/or severely uncontrolled symptoms (wheezing, coughing, shortness of breath, or chest tightness) where urgent treatment is needed in a medical setting and oral corticosteroids are warranted. The transition zone between the GZ of good control and the RZ of asthma exacerbation is the YZ.

Whereas the optimal outcome of asthma management is long-term control, asthma is a chronic but variable condition that is associated with morbidity when control is lost abruptly and quickly.<sup>5</sup> This notion highlights the value of a dynamic asthma intervention model, such as that provided by an AAP. The AAP is intended to respond to changes in asthma

Figure. Asthma Action Plan.

**Asthma Action Plan**

For: \_\_\_\_\_ Doctor: \_\_\_\_\_ Date: \_\_\_\_\_  
 Doctor's Phone Number \_\_\_\_\_ Hospital/Emergency Department Phone Number \_\_\_\_\_

**GREEN ZONE** **Doing Well**

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- Can do usual activities

**And, if a peak flow meter is used,**

**Peak flow:** more than \_\_\_\_\_  
 (80 percent or more of my best peak flow)

My best peak flow is: \_\_\_\_\_

**Take these long-term control medicines each day (include an anti-inflammatory).**

Medicine	How much to take	When to take it
_____	_____	_____
_____	_____	_____
_____	_____	_____

Before exercise  \_\_\_\_\_  2 or  4 puffs \_\_\_\_\_ 5 minutes before exercise

**YELLOW ZONE** **Asthma Is Getting Worse**

- Cough, wheeze, chest tightness, or shortness of breath, or
- Waking at night due to asthma, or
- Can do some, but not all, usual activities

**-Or-**

**Peak flow:** \_\_\_\_\_ to \_\_\_\_\_  
 (50 to 79 percent of my best peak flow)

**First** **Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.**

\_\_\_\_\_  2 or  4 puffs, every 20 minutes for up to 1 hour  
(short-acting beta<sub>2</sub>-agonist)  Nebulizer, once

**Second** **If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:**

Continue monitoring to be sure you stay in the green zone.

**-Or-**

**If your symptoms (and peak flow, if used) do not return to GREEN ZONE after 1 hour of above treatment:**

Take: \_\_\_\_\_  2 or  4 puffs or  Nebulizer  
(short-acting beta<sub>2</sub>-agonist)

Add: \_\_\_\_\_ mg per day For \_\_\_\_\_ (3–10) days  
(oral steroid)

Call the doctor  before/  within \_\_\_\_\_ hours after taking the oral steroid.

**RED ZONE** **Medical Alert!**

- 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

**-Or-**

**Peak flow:** less than \_\_\_\_\_  
 (50 percent of my best peak flow)

**Take this medicine:**

\_\_\_\_\_  4 or  6 puffs or  Nebulizer  
(short-acting beta<sub>2</sub>-agonist)

\_\_\_\_\_ mg  
(oral steroid)

**Then call your doctor NOW.** Go to the hospital or call an ambulance if:

- You are still in the red zone after 15 minutes AND
- You have not reached your doctor.

**DANGER SIGNS** ■ **Trouble walking and talking due to shortness of breath** → ■ **Take**  4 or  6 puffs of your quick-relief medicine **AND**

■ **Lips or fingernails are blue** → ■ **Go to the hospital or call for an ambulance** \_\_\_\_\_ **NOW!**  
(phone)

See the reverse side for things you can do to avoid your asthma triggers.

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