In asthmatics and COPD patients in respiratory distress, the major priority to keep in mind is the following:

**THE RESPIRATORY RATE MUST BE SLOWED TO A RANGE OF 15-20.**

No matter what you do, the patient will not improve significantly until that is accomplished.

The only way to accomplish that quickly is thru the use of narcotics. (Fentanyl is best bec it's so fast acting, but anything will do.) Once you do that, bronchodilators with or without CPAP will have a chance to work.

The reason that a slow respiratory rate is so crucial is because the problem in asthmatics and COPD patients is obstruction to exhalation. So it takes them a long time to exhale. A fast resp rate shortens the time available for exhalation, leading to breath stacking and ultimately hyperinflation, which worsens the mechanical advantage of the inspiratory and expiratory muscles and compounds the patient's resp distress, resulting in a vicious cycle.

In contrast, a slow resp rate lengthens the time available for exhalation. Once the patient has enough time for exhalation, their hyperinflation will slowly deflate, so their respiratory muscles will function much better and they'll breathe much easier. In addition, a slow resp rate is associated with higher tidal volumes, which lowers the dead space fraction, leading to greater elimination of CO2 and reduced work of breathing.

Therefore, when an asthmatic or COPD patient comes in with tachypnea and resp distress, the patient should immediately be given fentanyl or another opiate to slow down their resp rate, in addition to the usual bronchodilators, with or without CPAP. Getting the resp rate down is the #1 priority. Once you do that, the patient's problems are usually over.

The use of opiates is mother's milk to these patients. It's truly magic. Treating resp distress in asthmatics and COPD patients is just that simple.

One further note: You have to give enough opiate to work. And sometimes, it takes a lot more than you think, bec these patients are really revved up! So if you've given what you think should be enough opiate and the respiratory rate hasn't slowed yet, you need to give more!

How do you stay out of trouble when you're giving a lot of narcotic? Simple: Keep the patient on room air, and watch the Sat! When a patient is breathing room air, the Sat directly reflects alveolar ventilation. There is no reason to do blood gasses. If the patient is hypoxemic on room air, then use as little oxygen as possible to keep the Sat close to 90%. And you MUST watch the patient CLOSELY. This is not the kind of thing where you can give a dose of narcotic, leave the room, and check in on them every ten minutes.
Three other notes:

1. **NEVER, EVER, give a patient with resp distress a sedative, such as a benzodiazepine.**
   If the patient looks anxious to you, they have good reason to be: They're in resp distress! Once you relieve their resp distress, their anxiety will go away. The treatment for that is fentanyl or another opiate. It's that simple.

   In contrast, a sedative (such as Ativan) would only dull their mental status, which would reduce their drive to breathe, reduce their margin of safety, and reduce the margin of safety available for giving opiates.

   The use of opiates in respiratory distress is magic. The use of Ativan is a myth. (Not just a myth; it's hugely dangerous.)

   Note: If despite the aforementioned, you find yourself in a situation where the thought enters your mind that this patient is different, and Ativan is the right drug in this particular situation, just keep in mind that there's a > 99.99% chance that you're wrong. (If I gave the world $10,000 for each time Ativan was the right drug for a patient in resp distress*, and collected only a penny for every patient for whom an opiate was the right drug, I would be a millionaire in just one year.)

   [* By respiratory distress, I mean patients with resp distress due to an organic problem like asthma or COPD or CHF. I'm not talking about a patient in resp distress due to an anxiety attack, the latter for whom my treatment of choice would probably be a simple paper bag. Also, there are rare patients who suffer such anxiety that it produces acute severe bronchospasm and inability to move air. Our experience is that for such patients, fentanyl and CPAP will relieve their acute symptoms, and then a baseline of antianxiety medication (Ativan, Xanax, Klonopin, etc.) will hopefully prevent recurrence.]

2. **Use of CPAP and BiPAP** in asthmatics and acute 'tight' COPD patients with hyperinflation:
   As noted above, these patients have a problem with exhalation, because of narrowing of the airways (caused by bronchospasm, increased sputum production, bronchial wall edema, and/or airway closure). End-expiratory pressure (CPAP) -- which is essentially back-pressure applied to the airways -- is a specific antidote for this, bec it stents the airways open, promoting expiratory airflow.

   In contrast, these patients do **not** have a problem with inhalation. Moreover, if they take too large a tidal volume, that is going to worsen their hyperinflation and make breathing more difficult!

   So when it comes to CPAP vs BiPAP for these patients, always start them off with CPAP (start with a higher level of CPAP, such as 8-10cm, rather than just 5cm). Do not start off with BiPAP, bec that could make them worse, by giving them large tidal volumes. Once you put them on CPAP and watch them for a few breaths, the patient can be switched over to BiPAP, if their tidal volumes are too low, by adding 2cm of iPAP at a time.

   The use of CPAP in these patients is magic. In most of these cases, the use of BiPAP is a myth.

   [** Pure asthmatics virtually never need BiPAP. The same is true for the hyperinflated COPD patient with acute bronchospasm and/or airway closure. The situation is very different though for chronic COPD patients with an exacerbation. Many of the latter will, in fact, need BiPAP.**]
Figuring out which one is which is easy, since you can always start with CPAP and then after a few breaths, just switch over to BiPAP by adding a few cm of iPAP at a time, until the patient has a good chest rise and tidal volume. The resp therapists are very competent at doing this and if there's any question, my suggestion is to let them determine what the patient needs.]

3. **Ventilator management** of the intubated **acute** asthmatic/COPD patient:
In the unfortunate situation where the above type of patient winds up intubated, the same principle holds true: The respiratory rate must be kept slow to give the patient a longer time interval for exhalation. As a result, the best mode of ventilation for these patients is CPAP with Pressure Support, along with enough fentanyl to keep their resp rate in the 15 range (certainly no higher than 20). This allows the patient to regulate their own expiratory phase, which is much better than trying to manage their expiratory phase by guessing at the best ventilator settings. (IMO, these patients should **always** be managed with pressure-cycled ventilation, not volume cycled. Again, I'm talking about the acute, tight/wheezy patient, not the chronic COPD patient.)

In the event that such a patient needs to be paralyzed to achieve adequate ventilation, the resp rate, delta, and I:E ratio must be juggled to achieve the best alveolar minute ventilation at the lowest plateau pressure possible (with the PEEP-low being determined by matching the auto-peep.) End-tidal CO2 monitoring should be deployed in these patients as soon as possible after intubation, and a blood gas should be obtained within one hour to determine the end-tidal CO2 vs blood gas pCO2 difference. After you have that information, the end-tidal CO2 can be used to guide subsequent ventilator settings to achieve the best ventilation and pCO2.