



# COMBINATION THERAPY FOR ASTHMA AND COPD: A LOOK AT ADVAIR

by *Respiratory Care Student LeAnn Garcia*

I want all of you to imagine what it would be like not be able to take a big deep breath. Imagine what it would be like to not be able to take a simple walk without having to stop and rest to catch your breath. That is exactly what it feels like to have COPD and Asthma. We don't have to think about breathing, but a lot of people that have these lung conditions do. I chose Advair as my drug because I have two sisters who suffered from asthma as children. I remember one of the many times that one of my sisters had an asthma attack; I happened to ask her what it feels like. She told me it felt like an elephant was sitting on her chest and she could barely breathe. I couldn't imagine having asthma as a child and not being able to breathe. I wanted to research this drug and find out how it can improve lung function to people with asthma, and improve their quality of life. First of all, I wanted to find out the risks from taking Advair, so I started doing research on case studies involving deaths with Advair. I found two lawsuits involving deaths that occurred from people that had severe asthma, and did not have it under control before taking a long-acting bronchodilator. In May 2003, Advair added a label update announcing that the drug might increase the chance of severe asthma attacks that result in death ("PDR", 2007).

Advair was approved in 2000 by the FDA and is made by the pharmaceutical company GlaxoSmithKline. The cost of this drug is about \$220.00 per month depending on what pharmacy you go to, and the type of insurance you have. An interesting fact about the pharmaceutical company, GlaxoSmithKline that manufactures Advair, was that they reported 4 billion dollars in sales during the first five months in 2005. ("Drugs", 2008) Advair is a combination of two drugs, fluticasone and salmeterol. Fluticasone is a steroid and salmeterol is a non-rescue bronchodilator. When used together these drugs help treat symptoms associated with an obstructive pulmonary disease, namely asthma, emphysema, and chronic bronchitis. Salmeterol is a long-acting beta 2 adrenergic agonist (LABA); it works by relaxing the smooth muscles in the bronchus to improve the function of breathing. Salmeterol is different than other bronchodilators, because it does not act as fast as others to relieve an asthma attack once it has started ("Health Reference", 2008). Fluticasone is a steroid that helps with the inflammation of the airways (Gardenhire, 2008). It belongs to the family of medicines known as corticosteroids. Advair is used when a patient's condition is not controlled by a fast acting bronchodilator such as, albuterol and

more than one maintenance drug is needed ("Health Reference", 2008).

There are two phases to asthma, the early phase and late phase. It is very critical that a person with asthma takes their fast-acting bronchodilator first at the onset of an asthma attack, and then takes Advair. Advair will help them overcome the late phase of asthma, which starts 6-8 hours after their initial response, and can last up to 24 hours (Gardenhire, 2008)! Asthma is a disease that causes inflammation of the airways to constrict. Asthma causes wheezing, coughing, and a tight chest feeling, especially at night or in the early morning. COPD or chronic bronchitis is also inflammation of the airways and

excess mucous production, which causes a chronic cough. In chronic bronchitis there is excessive mucous production and cough for a period of three months or more for two consecutive years. Cigarette smoking is generally the cause of this disease and the reason why the chronic cough is referred to as "smokers cough" ("Mayo clinic," 2006).

The mechanism of action for salmeterol is a (LABA) long-acting beta 2 adrenergic agonist. Studies (2007) have shown, "salmeterol is at least 50 times more selective for beta 2 adrenoceptors than albuterol" (p. 3). The pharmacologic effects of a beta 2-adrenoceptor agonist drugs stimulate adenylyl cyclase to cyclic

3'5'-adenosine monophosphate (cyclic AMP). Increased levels cause the relaxation of bronchial smooth muscle and inhibit the release of mast cells. (Gardenhire, 2008) A warning label included in the package insert for Advair contains a warning that long-acting beta 2 adrenergic agonists, salmeterol can increase the risk of an asthma-related death. It is important for a physician to ask specific questions when prescribing this drug to them. This medication is not for patients that have asthma that is adequately controlled on other forms of asthma-controlled medications. A clinical study in 1997 found that there were 13 deaths out of 13,176 patients that were treated for 28 weeks on Salmeterol ("PDR", 2007). The mechanism of action for fluticasone is a synthetic corticosteroid with a potent anti-inflammatory activity. It inhibits many different cell types including mast cells, eosinophils, basophils, lymphocytes, macrophages, and neutrophils. Another similar drug that is the new alternative to Advair is called Symbicort. Symbicort has formoterol and budesonide and is a metered dose inhaler. Formoterol is a non-

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*Ms. Garcia will receive a \$100 gift certificate and a gratis registration to the 2009 Focus Conference. Her school's RC Program will also receive a \$100 donation.*

*Students are encouraged to submit their papers for the Mar/Apr issue by Feb 15th.*

*Papers should be 900 - 1250 words and should be submitted as MS Word files to Craig Baker at CkerCT78@yahoo.com.*

sion device. Upon harvesting the organ, donor blood is circulated through the heart-lung pump to the warm, living organ. The donor blood is heated and oxygenated, and the organ is transplanted in a pre-oxygenated state. This warm organ perfusion device will greatly expand the currently limited transplant window. This breakthrough innovation will have a significant impact on all organ transplants.

**1: Use of Circulating Tumor Cell Technology**

A new technology will enable oncologists to measure circulating tumor cells (CTCs) in a sample of blood. CTCs are cancer cells that have broken away from an existing tumor cell and are found in circulating blood samples. The detection of CTCs is a significant finding and may help predict a patient's prognosis.

This technological advance will facilitate the early detection of rogue cancer cells in patients who have experienced recurrent cancer. This will give patients the ability to assess their progress with treatment and focus the patient-physician team on future therapeutic options. This breakout technology will have critically important reproductions in the lives of many cancer patients' worldwide and will help in guiding future therapeutics.

The informed clinician will, of course, understand that this has been but a perfunctory review of these exciting technologies. I think it is an essential component of compassionate, evidence-based care that clinicians maintain a contemporary knowledge of evolutionary therapeutic options. To that end, I would encourage further investigation of these innovations.

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**Hyperbaric Medicine**...continued from page 74

to take one outside in nice weather and do a PASS (Pull, Aim, Squeeze, Sweep)? Some may only last for 10 seconds of use and can get very cold to the touch when handling.

More things to consider:

- At what point would you close the main oxygen shut-off valve for the hyperbaric area – as you run past it?
- If a horizontal evacuation can no longer be used, where are the stairwells located?
- If the fire has blocked your exit, is there a second exit door? If both were blocked would you seal the doors with wet blankets while notifying security of your trapped situation?
- Sometimes windows can be used for escape but this decision is made only after better options are eliminated.

In discussing these scenarios with staff, we found ourselves unsure of some of the answers, which raised our anxiety levels. Not knowing the answers ahead of time can lead to wasted time and panic - a deadly mix. If practice in a controlled situation can raise tension, imagine the anxiety and staff performance in the real situation.

Knowing the answers and practicing the procedures is the only way to give your patient and yourself the best chance of getting it all right when your survival depends on it. Why not practice a fire evacuation in the hyperbaric department as part of the hospital-wide fire drill program for 2009?

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rescue long-acting bronchodilator that relaxes the muscles in the airways to improve breathing. Budesonide is a steroid that reduces inflammation in the airways. Symbicort is also used to treat bronchospasm in people with COPD, chronic bronchitis and asthma ("Drugs, 2008"). The difference between these two drugs is that formoterol has an onset of 15 minutes and a peak time of 30-60 minutes when compared to Salmeterol's onset of 20 minutes and peak time of 3-5 hours (Gardenhire, 2008).

Advair's dosing should be administered orally inhaled only and given twice daily. If this drug is to be given in a sequence, Advair is to be given last. First, the fast acting rescue bronchodilator is given (SABD), along with mucomyst if needed. The very last drug given would be Advair, making sure the patient rinses and spits afterwards. Advair Diskus is a powder form of fluticasone and salmeterol that comes in a special inhaler device preloaded with blister packs that contain measured doses of medicine. Advair also comes in an HFA inhaler; this is considered the more "green" approach, and is better for the environment when compared to a metered dose inhaler. After the drug is inhaled, rinsing the mouth without swallowing is ideal to prevent the growth of yeast in the mouth. There are three combinations of dosages available, the smallest dosage is 100mcg/50mcg, the intermediate dosage is 250 mcg/50mcg, and the highest dosage is 500mcg/50mcg. Another important factor to consider when taking a dry powder inhaler is that the patient must be able to generate air flow at least 60 liters per minute to adequately take the medication (Gardenhire, 2008).

Many concerns have been raised that salmeterol may increase the risk of an asthma-related death. Research has shown that the African-American ethnicity has a higher risk than Caucasian ("PDR", 2007).

In conclusion, I researched in the Asthma and COPD guidelines in Appendix D and found that Advair is to be given at step 2, mild persistent asthma the preferred treatment is a low-dose inhaled corticosteroid. From all of this research and case studies, I found that Advair is safe for use, even though there were deaths related to the use of this drug. It's too bad that this drug was not available 15 years ago, when my younger sisters suffered from asthma. I feel they could've benefited from it to increase their quality of life.



**"Sorry the product didn't work. We'll send you another one that doesn't work."**