

# TerranearPMC Safety Share

## Week of January 27, 2014 – What we don't know about Asthma

As it turns out, asthma is something of an enigma; for what was once was accepted as a well known fact that this disease is caused by poor air quality, new theories are suggesting how much we have yet to understand. Over the past few decades health organizations have seen substantial increases in asthma in various populations; both within the US and on the international stage and are currently perplexed with this growing problem.

Asthma is a chronic lung disease that inflames and narrows the airways. It causes recurring periods of wheezing (a whistling sound when you breathe), chest tightness, shortness of breath, and coughing. The coughing often occurs at night or early in the morning. It affects people of all ages, but it most often starts during childhood. In the United States, more than 25 million people are known to have asthma. About 7 million of these people are children. While asthma is typically associated with allergic reactions or an exacerbated condition from the inhalation of poor ambient air quality, asthma has also been recognized as an occupational illness. An estimated 11 million workers in a wide range of industries and occupations are exposed to at least one of the numerous agents known to be associated with occupational asthma. Occupational factors are associated with up to 15 percent of disabling asthma cases in the United States.

Here are some statistics and points of interest regarding asthma:

- ▶ The number of people with asthma continues to grow. One in 12 people (about 25 million, or 8% of the U.S. population) had asthma in 2009, compared with 1 in 14 (about 20 million, or 7%) in 2001.
- ▶ More than half (53%) of people with asthma had an asthma attack in 2008. More children (57%) than adults (51%) had an attack. 185 children and 3,262 adults died from asthma in 2007.
- ▶ About 1 in 10 children (10%) had asthma and 1 in 12 adults (8%) had asthma in 2009.
- ▶ In 2010, 3 out of 5 children who have asthma had one or more asthma attacks in the previous 12 months.
- ▶ For the period 2008–2010, asthma prevalence was higher among children than adults.
- ▶ In 2008 less than half of people with asthma reported being taught how to avoid triggers. Almost half (48%) of adults who were taught how to avoid triggers did not follow most of this advice.
- ▶ About 1 in 9 (11%) non-Hispanic blacks of all ages and about 1 in 6 (17%) of non-Hispanic black children had asthma in 2009, the highest rate among racial/ethnic groups.
- ▶ For the period 2008–2010, asthma prevalence was higher among multiple-race, black, and American Indian or Alaska Native persons than white persons.
- ▶ From 2001 through 2009, the greatest rise in asthma rates was among black children (almost a 50% increase).

For a long time various health organizations thought they had a good idea of what might be fueling the increased numbers of those contracting asthma. Ironically, the latest theory is that the world we live in is just a little too clean! According to this notion - known as the hygiene hypothesis - exposure in early childhood to infectious agents causes the immune system to develop a number of highly effective defenses against disease-causing viruses, bacteria and parasites. Therefore, according to the *hygiene hypothesis*, better sanitary conditions deprive the immune system to develop these defenses so that for reasons that are still unclear, the body pounces on harmless particles, such as dust and ragweed as if they were deadly threats. The resulting allergic reaction leads to the classic signs of asthma: chronic inflammation or swelling of the airways and acute spasms of those passageways. The hygiene hypothesis was first described in 1989 by a British epidemiologist who was studying hay fever. The more children in a family, he noticed, the lower



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the rates of hay fever and eczema (an allergic skin condition). Children in large families tend to swap colds and other infections more often than children with fewer siblings. Therefore, it was thought that possibly, an increased exposure to pathogens from their many siblings was protecting children from large families against allergies.

That same year an epidemiologist at Munich University, was looking into the effect of air pollution on asthma in what was then East and West Germany. It was discovered, contrary to what was expected, children from dirtier East Germany had dramatically less asthma than their West German counterparts living in cleaner, more modern circumstances. The East German children, unlike their Western counterparts, had spent more time in day care and thus had likely been exposed to many more viruses and bacteria. Evidence in support of this hypothesis comes from a recent study conducted in Japan. Researchers found that among young school children with evidence by skin test of having once had a tuberculosis infection, asthma was far less common than among the school children who had never been exposed to the tuberculosis germ.

However, data contrary to the hygiene theory expectations, show increased asthma rates in urban areas in the U.S. that are not particularly clean. Moreover, the big increase in asthma rates in developed countries did not kick off until the 1980s; well after general sanitary conditions in the richer parts of the world had improved. And some studies are beginning to show that far from protecting children from asthma, respiratory infections in early childhood may actually be a risk factor for it.

Another explanation suggests that our "tight" houses are to blame. As we emphasize energy efficiency in our homes, our homes and office environments are constructed with far less circulation of fresh air. Stimuli that promote the development of asthma - from dust mites to mold to animal dander to second-hand cigarette smoke - are found in higher concentrations in tightly sealed homes. It has been found that when certain populations of people moved from living mostly outdoors in villages to living mostly indoors in confined living quarters, the rate of asthma in the population increased significantly.

Today health professionals around the world seem to agree that the startling jump in asthma rates is a much more complex condition than anyone had truly appreciated. Indeed, it may not be even be a single disease. Studies now suggest that only half of asthma cases have an allergic component. The prevention and treatment implications are significant. If, for instance, it is true that allergy is not a fundamental cause of asthma in many people, then an alternative mix of treatments may be more effective for those individuals. To root out asthma's cause (or causes) and properly treat the burgeoning number of people who are affected - 300 million globally at last count - scientists will have to come to grips with the biology of its various forms.

So what can those of us that have been diagnosed with asthma do to reduce the painful and irritating affects attributed of this disease? Experts agree that you should know your personal warning signs of an asthma attack, like staying away from things that cause an attack, and following your doctor's advice. That means know your personal "triggers;" some of which are: tobacco smoke, dust mites, mold and, unfortunately, house pets.

### **BEAUTIFUL THINGS DON'T ASK FOR ATTENTION**

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