Temperature, humidity and your asthma

Air Quality News from IQAir

Studies have proven the connection between cold air and an increase in asthma symptoms. However, warm and humid weather – especially when humidity exceeds 50% – is also linked to increases in asthma symptoms. Recently, scientists have started to more fully understand the extent to which temperature and humidity trigger asthma flare-ups. They have also begun to understand why.

Heat, humidity and asthma

Researchers at Children’s Hospital of Michigan analyzed more than 25,000 asthma-related hospital visits, carefully controlling and correcting for the effects of airborne pollutants, seasonal allergens and other environmental factors. They found that increases in hospital admissions related to humidity and temperature could be quantified. Each 10% increase in humidity was correlated with one additional emergency department visit for asthma beyond the hospital’s daily average of 35. They also found that every 10-degree rise in temperature resulted in two additional asthma-related hospital visits for asthma.

In a laboratory study, physicians at the University of Kentucky Medical Center assessed the pulmonary responses of asthmatic and non-asthmatic patients who breathed through a device providing air at a specific temperature and humidity level. Hot, humid air was observed to produce an immediate increase in airway resistance among asthmatic patients, but not in non-asthmatic patients. The hot, humid air also produced coughing in the patients with asthma, but not in the non-asthmatic patients.

Scientists find a possible cause

A later study published by the same University of Kentucky Medical Center team provided at least a partial explanation of how hot and humid air affects asthma patients. This time the researchers focused on a group of nerves – known as C fibers – in the human respiratory system. These nerves, when stimulated, play an important role in causing coughing.

The researchers found that C fiber nerves become activated when the temperature within the chest is elevated, resulting in coughing and constriction of the airways as a defense mechanism. The scientists called for additional research into the effects of heat and humidity on the human body and raised the hope of developing new drugs for treating asthma.
Cold air also triggers asthma

Cold, dry air can also cause spasms in the airways and trigger asthma symptoms, as many people with asthma already know. One survey found that 75% of people with asthma say cold air is a trigger of their asthma symptoms.

Studies have identified a number of specific ways that cold air induces asthma flare-ups. Short-term responses such as sneezing and congestion are typical. There is also evidence that repeated breathing of cold air may damage the lining of the airways and airway walls.

Steps you can take

Fortunately, there are steps those who suffer from asthma can take to help avoid asthma flare-ups as a result of extreme temperature and humidity conditions. Here are a few suggestions:

**Wear a mask or scarf in cold weather.** These may help by trapping moisture when the air outside is cold and dry.

**Use asthma medications wisely.** Consult with your doctor about using a rescue medication before exercising outdoors when weather is extremely cold or hot.

**Maintain a relatively constant temperature and humidity in your home.** Sudden temperature shifts can trigger asthma symptoms.

**Keep windows closed and use air conditioning to control heat, cold and humidity.** It is recommended to keep indoor humidity levels between 30% and 50%.

In addition to changes in temperature and humidity, environmental pollutants such as smoke, mold, pollen, dust mites and other pollutants can trigger asthma flare-ups. But by taking a few simple steps to reduce the effects of temperature and humidity on your asthma, you can eliminate some of your asthma triggers and breathe easier regardless of weather conditions.

*This online publication is brought to you by The IQAir Group, which develops innovative air quality solutions for indoor environments around the globe. IQAir is the exclusive educational partner of the American Lung Association for the air purifier industry.*

Footnotes:

1. "Changes in weather and the effects on pediatric asthma exacerbations, Mireku, Nana et al., Annals of Allergy, Asthma & Immunology, Volume 103, Issue 3, 220 - 224.