



**The Unified Airway: The Link between Rhinitis and Asthma**  
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When nasal allergy symptoms peak, many allergy sufferers notice intermittent chest tightness, shortness of breath, or coughing. This is not entirely unexpected: inflammation of the upper airways—the nose and sinuses—can trigger inflammation of the lower airways—the bronchi, leading to the development of asthma or asthma like symptoms. Studies show that 20% of children with allergic rhinitis will develop asthma within the next 10 years. Asthma is characterized by hyperreactivity of the bronchial airways. Many patients with environmental allergies are found to have bronchial hyperreactivity both during and outside of their allergy season, even in the absence of any chest symptoms. It is thought that these patients are most at risk of developing asthma.

The mechanism of this upper-lower airway (rhino-bronchial) connection is unclear. Possibilities include an irritant effect from postnasal drip or from cold, dry air entering the lower airways when mouth breathing, a rhino-bronchial reflex involving the vagal nerve, or, most interestingly, the spreading of allergic inflammation from the nose to the bronchi via infiltration of the mucosal lining by inflammatory cells and the chemicals they release which act as mediators of the inflammation. Whichever the mechanism, this link uniting the upper and lower airways is thought to play a crucial role in the development of asthma in patients with allergic rhinitis.

The Unified Airway concept is not limited to the link between nose and lungs. Recent studies suggest a “crosstalk” between nose and eyes: treatment of nasal allergies with a nasal steroid spray can lead to significant improvement of allergic eye symptoms. As the nasal steroid is too small a dose to be detected in the bloodstream and is unlikely to work its way against gravity through the naso-lacrimal duct into the eye, the mechanism is again thought to be a mucosal connection, possibly via a nose-eye reflex involving the nervous system. A similar mechanism is likely to play a role in the well-known association between gastro-esophageal reflux and worsening asthma.

If the upper and lower airways behave as an anatomical unit, can anything be done to prevent the progression from allergic rhinitis to asthma? Some exciting research has been done in that regard. The Preventive Allergy Treatment Study (called the PAT study) followed 205 children, age 5 to 13 years, with seasonal allergic rhinitis. For three years, needed medications were given to all, while half of the children received additional subcutaneous immunotherapy (allergy shots). Of the children who didn't have asthma at the start of the study, 44% in the control group (medications only) developed asthma at the end of three years, compared with only 24% of the immunotherapy group, a highly significant difference. A follow-up analysis three years later and recently now seven years after discontinuation of the study, shows a similar significant difference between the control and immunotherapy group, indicating that subcutaneous immunotherapy can lower allergic children's risk of developing asthma up to at least seven years after immunotherapy treatment has been completed.

Once allergies and asthma have developed, the link between upper and lower airways can still be utilized in our favor: optimal treatment of nasal symptoms resulting from allergies or sinus inflammation will help control asthma. Conversely, when asthma is stabilized, allergy symptoms of the entire airway tend to improve as well.

The tight connection between allergic rhinitis and asthma is leading to international recommendations for early testing for asthma in patients with allergic rhinitis. Once bronchial involvement is detected, the therapeutic strategy is in favor of the integrated treatment of the two conditions as a single syndrome.

So talk to your physician about any upper and lower airway symptoms you have. Don't be surprised if your doctor suggests a spirometry, a lung function which checks the airflow out of your lungs; even patients who have only nasal symptoms can have bronchial involvement without perceiving it. Optimal recognition and unifying treatment of both upper and lower airway symptoms is the most effective path to your overall health.