

Researchers Study Biofeedback for Asthma

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DENVER — National Jewish Health researchers are delving into the biology of biofeedback to understand how it helps asthma patients and what role it could play in reducing medication use for the chronic lung disease. In a study funded by the National Institutes of Health, they are evaluating two forms of biofeedback, based on controlling heart rate and specific brain waves, and assessing their impact on inflammation in the lungs and the ‘twitchiness’ of asthma patients’ airways.

“Previous studies have shown that biofeedback can improve asthma patients’ lung function and reduce the need for medications,” said principal investigator Fred Wamboldt, MD, Professor of Medicine at National Jewish Health. “As such, biofeedback holds great promise for becoming an effective alternative to controller steroid medications. We need, however, to understand exactly how these techniques affects the lungs and airways before either can become an accepted therapy.”

Any therapy that could serve as an alternative or complement to steroid therapy would be especially welcome. Although inhaled steroids have been shown to be safe, many people are concerned about side effects, such as weight gain and reduced growth, and do not take adequate amounts to control their asthma. Any therapy that could improve asthma control while reducing the need for expensive medications would also be welcome.

Sensitive monitors can detect brain waves and minute variations in the heart rate. Researchers at National Jewish Health and the Robert Wood Johnson Medical School in New Jersey will attach those monitors to asthma patients, who will be able to see their brain waves and heart rate in real time. The researchers will then help the study participants learn how to control these important body functions. Previous studies have shown that such techniques can improve lung function and reduce the need for asthma medications.

In this study, researchers will examine more closely the physiological effects of these types of biofeedback. Asthma has two primary components, inflammation and ‘twitchy’ muscles surrounding the airways, which can overreact to mild irritants, contract and close the airways. The researchers will measure airway ‘twitchiness’ with a test known as a methacholine challenge. They will monitor inflammation by measuring exhaled nitric oxide.

“These tests will help us better understand how biofeedback affects the lungs,” said Dr. Wamboldt. “That will help us understand whether they could be most effective as alternative or complementary therapies to controller steroid medications or to inhaled rescue medications.”

Researchers are seeking adults who have mild to moderate year-round asthma for participation in the study. The study will involve weekly visits to National Jewish Health over the course of four months. Eligible volunteers receive no-cost asthma evaluations, detailed action plans, training in one of two biofeedback methods and reimbursement for their time. For more information contact Valentina Vannoni at National Jewish Health at 303.398.1793 or vannoniv@njhealth.org.

National Jewish Health is the leading respiratory hospital in the nation. Founded 122 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the

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