

# CONNECTIONS

## New Hope for Prevention of Childhood Food Allergies

Emerging evidence suggests that early introduction of potentially allergenic foods can reduce risk of food allergies

by Bruce J. Lanser, MD

National Jewish Health clinicians have a long history of caring for children who are at the greatest risk for developing allergic disease. Recognition of the increased risk for food allergies among this population has led to careful evaluation for food allergies with skin and blood testing, as well as observed food challenges when indicated. The goal is always to have a child on the safest, least-restrictive diet possible to avoid food aversion, and nutritional and growth deficiencies.

From 2000 to 2008, the American Academy of Pediatrics recommended delayed introduction of highly allergenic foods, such as peanuts.<sup>1</sup> Now, limited, observational evidence has suggested that early introduction of highly allergenic foods may be beneficial for preventing allergies. The recently published LEAP (Learning Early About Peanut allergy) Study has provided evidence to support these earlier observations.<sup>2</sup>

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**Advice for Parents to Prevent Kids' Food Allergies**

**Expose children to foods in the first year of life to possibly reduce risk of food allergy and eczema**

**First Foods**

At 4-6 months of age, begin introducing age-appropriate first foods. Isolate foods and keep a food diary — introduce single-ingredient foods, no more than 1 new food every 3-5 days.

- Rice or oat cereal
- Yellow & orange vegetables
- Fruits
- Green vegetables
- Age-appropriate staged foods with meats

**Top Allergenic Foods**

If first foods are tolerated, begin age-appropriate forms of allergenic foods and record in food diary.

- Eggs
- Milk besides whole cow's milk
- Soy
- Peanuts & tree nuts (in butter form, not whole nuts due to choking hazard)
- Wheat
- Fish
- Shellfish

**General Advice**

Certain children should be seen by an allergist before introducing these allergic foods, including those with moderate to severe eczema that is difficult to control and those who have previously reacted to a food or already have a food allergy.

Try these foods at home first, not at daycare or a restaurant.

Begin with a small amount. If no reaction occurs, give in gradually increasing amounts over the 3-5 day period.

Recommendations are from the American Academy of Allergy, Asthma, & Immunology.

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Gideon Lack MD, who led the LEAP study, completed his clinical fellowship in allergy/immunology in the Department of Pediatrics at National Jewish Health and spent several years in the laboratory of Erwin Gelfand MD, chairman of Pediatrics. In the laboratory at that time, experiments suggested that allergens can sensitize the host via the skin, especially if the skin barrier is disrupted as occurs in eczema. These observations prompted thinking that early eczema can result in early sensitization.

The LEAP Study showed that introduction of peanuts into the diets of high-risk infants (ages 4 to 11 months) successfully reduced the absolute risk of developing peanut allergies by 11 to 25 percent with a relative risk reduction of up to 80 percent, compared to patients who were strictly avoiding peanuts. It is important to note that this does not apply to the general population, but rather to patients with significant atopic dermatitis or egg allergy.

With decades of clinical and investigational experience, clinicians at National Jewish Health have developed protocols for evaluating and challenging patients who qualify for early intervention. Children with no known risk of food allergy should continue to follow the guidance of their pediatrician regarding introduction of new foods into an infant's diet. Those at risk should be evaluated by a pediatric allergist, who is well-trained in food allergy.

Based on the results of testing, some infants will be able to undergo a food challenge to peanut protein. If they pass, they can regularly consume peanut at home, with close monitoring. Some children, unfortunately, develop significant peanut allergy very early in life, and may not be able to safely participate in a challenge. For these patients, clinicians at National Jewish Health focus on education, avoidance, preparedness, and nutritional monitoring while also offering participation in a number of interventional studies at National Jewish Health.

The results of the LEAP Study are exciting, as it provides an opportunity to intervene, and possibly change the course of disease for some patients at high risk for peanut allergy. The best time to see these patients is from around 4-6 months of age as complementary foods are starting to be introduced. There is often a significant level of fear and anxiety for parents and patients regarding food allergy, which is why National Jewish Health offers comprehensive testing and management for children of all ages, utilizing a multi-disciplinary team including clinicians, nurses, child life specialists and nutritionists to provide a positive experience. The Pediatric Food Challenge Center at National Jewish Health is uniquely able to perform a wide variety of food challenges.

#### References:

- <sup>1</sup> American Academy of Pediatrics, Committee on Nutrition. Hypoallergenic infant formulas. *Pediatrics* 2000;106:346-9.
- <sup>2</sup> Du Toit G, Roberts G, Sayre PH, et al. Randomized trial of peanut consumption in infants at risk for peanut allergy. *N Engl J Med* 2015;372:803-13.



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# Male Smokers at Higher Risk than Females for Osteoporosis, Fractures

## Smokers of both genders should be screened for low bone density

In a large study of middle-aged to elderly smokers, men were more likely than women to have osteoporosis and fractures of their vertebrae. Smoking history and chronic obstructive pulmonary disease (COPD) were independent risk factors for low bone density among both men and women in the study, which has been published online in the *Annals of the American Thoracic Society*<sup>1</sup>.

Current guidelines do not recommend osteoporosis screening for men. While current smoking is a recognized risk factor for osteoporosis, neither smoking history nor COPD are among criteria for bone-density screening. Almost half of people over age 45 in the United States are current or ex-smokers.

According to lead author Elizabeth Regan, MD, assistant professor of medicine at National Jewish Health, study findings suggest that current and former smokers of both genders should be screened for osteoporosis. She notes that expanding screening to include men with a smoking history and starting treatment in those with bone disease may prevent fractures, improve quality of life and reduce health care costs.

The researchers, from National Jewish Health and other institutions, used quantitative CT to assess bone density in 3,321 current and former smokers ages 45 to 80, with a minimum 10 pack-years of smoking history. Overall, 58 percent had low bone density. Thirty-seven percent of the participants had one or more fractures of their vertebrae. Men accounted for 55 percent of the smokers with low bone density and 60 percent of those with vertebral fractures.

Low-bone density increased in prevalence with a longer smoking history and worsening COPD, rising to 84 percent among severe COPD patients of both genders. Those with low bone density had an average of 46.9 pack-years of smoking history.

Dr. Regan notes that the growing use of CT scans to screen heavy smokers for lung cancer may provide an opportunity to use the same scans for bone density screening in this high-risk population.

### Reference:

<sup>1</sup> Regan E, et al. "Reduced Bone Density and Vertebral Fractures in Smokers. Men and COPD Patients at Increased Risk," *Annals of the American Thoracic Society*, Vol. 12, No. 5 (2015), pp. 648-656.



**Elizabeth Regan, MD, PhD**  
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## Current Research from ATS 2015

ATS 2015, the annual meeting of the American Thoracic Society, was held May 15-20 in Denver. More than 30 National Jewish Health physicians presented the results of current research. Here are highlights from four presentations. Complete abstracts can be found online at [atsjournals.org](http://atsjournals.org), under *American Journal of Respiratory and Critical Care Medicine*.(AJRCCM)

### E-Cigarette Use in Older Americans from the COPDGene Cohort

E-cigarette use is rapidly growing. However, data on usage among older Americans, those with smoking-related lung disease such as COPD, and minorities is scarce. Researchers with the COPDGene study evaluated 599 subjects with at least 10 pack-years of smoking history. Approximately 11 percent had tried e-cigarettes. Those who tried e-cigarettes had significantly higher total scores for dyspnea. COPD exacerbation rates between users of E-cigarettes and non-users were similar.

E-cigarette users most frequently reported that they started using them to cut down smoking tobacco cigarettes (91 percent), and to improve their health (88 percent). Only 47 percent reported success in reducing the number of tobacco cigarettes they smoked.

**Conclusion:** Though participants may perceive that e-cigarettes have health benefits, there is no significant evidence of a beneficial association between e-cigarette use and reduction in smoking of tobacco cigarettes or progression of COPD.

Reference: Bowler, RP, Make, BJ, Regan EA, et al. "E-Cigarette Use in Older Americans from the COPDGene Cohort," *Am J Respir Crit Care Med* (Online Abstracts Issue), 191; 2015:A3908

### Does Supplemental Oxygen Expand ILD Patients' Worlds?

#### Assessment by Global Positioning System (GPS) and Accelerometry

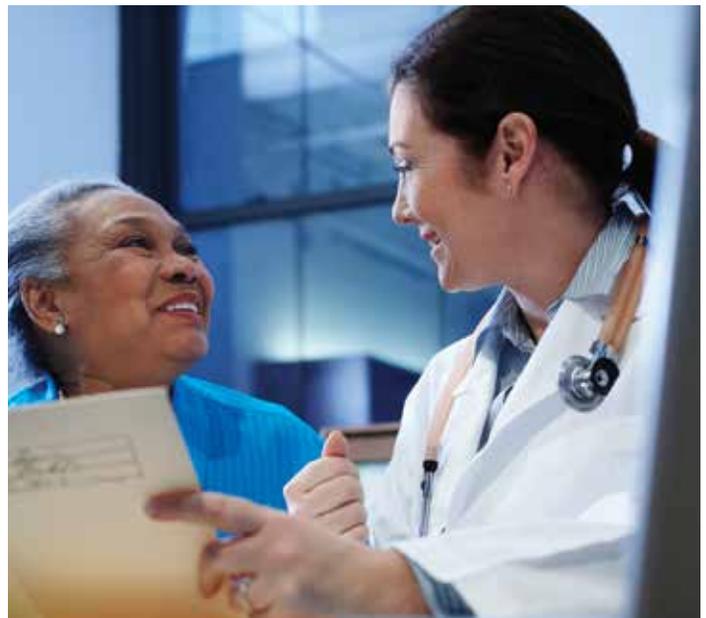
Pulmonary fibrosis (PF) is a chronic, progressive lung disease that restricts activity and impairs quality of life for patients. Nearly every PF patient will eventually be prescribed supplemental oxygen. However, current knowledge about the effects of supplemental oxygen on patients' lives is almost non-existent.

This research measured the effect of supplemental oxygen on day-to-day functioning and activity in patients with PF. Along with completing a survey and a daily activity diary, patients were asked to wear an accelerometer and a GPS device for one week at four separate time points before and after commencing daily supplemental oxygen use.

The accelerometers and GPS devices allowed researchers to track sedentary time (average daily minutes and overall percent of time spent sedentary), and activity space (the geographic range of daily activities) before and after oxygen therapy.

**Conclusions:** Preliminary results from 12 subjects indicate that patients made occasional trips further from home after beginning oxygen therapy, but on average, spent approximately the same amount of time within the same general area. There was no significant difference in sedentary time before versus after starting supplemental oxygen.

Reference: Root E, Albright K, Wamboldt, FS, Swigris, JJ, et al. "Does Supplemental Oxygen Expand ILD Patients' Worlds? Assessment by Global Positioning System (GPS) and Accelerometry," *Am J Respir Crit Care Med* (Online Abstracts Issue) 191; 2015:A5205.



### Effect of Continued Treatment with Pirfenidone Following a Clinically Meaningful Decline in %FVC in IPF Patients

In this analysis, researchers used pooled data from three Phase 3 trials of pirfenidone to assess the potential benefit of continued treatment with pirfenidone for idiopathic pulmonary fibrosis (IPF) patients who experienced a 10 percent or greater decline in lung function.

Among IPF patients who experienced a 10 percent or greater decline in percent predicted forced vital capacity (%FVC), those taking pirfenidone were less likely to suffer an

## Current Research from ATS 2015

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additional 10 percent or greater decline in %FVC during the following six months than those taking placebo. A greater percentage of patients in the pirfenidone group had no further decline in %FVC. Additionally, there were fewer deaths in the pirfenidone group compared with placebo.

**Conclusions:** In a post hoc analysis, IPF patients who experienced a 10 percent or greater decline in %FVC during the first six months of pirfenidone therapy had a lower risk of continued %FVC decline or death than those taking placebo during the subsequent six months. These findings suggest a potential benefit to continued treatment with pirfenidone despite an initial decline in %FVC.

Reference: Nathan SD, Swigris JJ et al. "Effect of Continued Treatment with Pirfenidone Following a Clinically Meaningful Decline in Percent Predicted Forced Vital Capacity in Patients with Idiopathic Pulmonary Fibrosis (IPF)," *Am J Respir Crit Care Med* (Online Abstracts Issue) 191; 2015:A1016.

### Usual Interstitial Pneumonia Preceding Arthritis: Clinical and Histological Features

Interstitial lung disease (ILD) is a frequent complication of rheumatoid arthritis (RA) and results in significant morbidity and mortality. Usual interstitial pneumonia (UIP) is the most common pattern of RA-associated ILD. Occasionally, patients who present with idiopathic UIP develop RA at some point in the future. The aim of this study was to determine which clinical or histopathologic characteristics might help identify patients who present with idiopathic UIP who are more likely to develop RA in the future.

Researchers reviewed the records of 84 patients (UIP/IPF, 73 patients; UIP/pre-RA, 11 patients) with UIP-pattern identified in surgical lung biopsy specimens. Pathology slides were re-reviewed by two expert pulmonary pathologists. In patients with UIP/pre-RA, mean duration from ILD diagnosis to RA development was 2.16 years.

**Conclusions:** There were no significant differences in the age of UIP onset, gender, symptoms or prognosis between the UIP/IPF and the UIP/pre-RA groups. UIP pre-RA patients had better pulmonary function at baseline. Idiopathic UIP patients with a low fibroblastic foci score and high germinal score on biopsy are more likely to develop RA in the future.

Reference: Tsuchiya Y, Brown, KK, Groshong, SD, Lynch, DA, Solomon, JJ, Swigris, JJ, et al. "Usual Interstitial Pneumonia Preceding Arthritis: Clinical and Histological Features," *Am J Respir Crit Care Med* (Online Abstracts Issue) 191;2015:A1171.

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