INTRODUCTION

Food allergy is considered a **precursor to asthma** in the context of the atopic march,

but the **relationship between infant food allergy phenotypes and lung function and asthma** in childhood is **unclear**.

We aimed to **examine the association between food sensitization and challenge-confirmed food allergy** in infancy, as well as **persistent and resolved food allergy** up to age 6 years, and the **risk of lung function deficits and asthma** at age 6 years.

INNOVATION AWARD
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Rachel PETERS

INFANT FOOD ALLERGY PHENOTYPES AND ASSOCIATION WITH LUNG FUNCTION DEFICITS AND ASTHMA AT AGE 6 YEARS: A POPULATION-BASED, PROSPECTIVE COHORT STUDY IN AUSTRALIA

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#FOODALLERGY
#ASTHMA
#LUNGFUNCTION
#INFANCY

METHODS

The longitudinal, population-based **HealthNuts cohort** study in Melbourne, recruited **5,276 infants children aged 1 year between 2007-2011**.

Infants completed **skin prick testing (SPT)** to four foods and an **oral food challenge (OFC).**
At age 6 years, children underwent **SPT, OFC, and lung function testing by spirometry**. Questionnaires captured the child's allergy and respiratory history.

We investigated **associations between food allergy phenotypes, lung function spirometry measures** *(forced expiratory volume in 1 sec [FEV1] and forced vital capacity [FVC] z-scores, FEV1/FVC ratio, forced expiratory flow at 25% and 75% [FEF25–75%], and bronchodilator responsiveness),* **and asthma**, using regression methods.

RESULTS

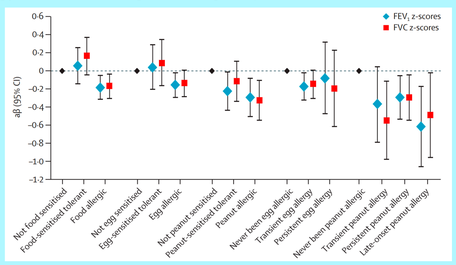
PARTICIPATION

Of 5276 participants, **3233** completed the health assessment at age 6 years and were included in this analysis.

ASSOCIATION BETWEEN FOOD ALLERGY AND LUNG FUNCTION

Food allergy, but not food-sensitized tolerance, at age 1 year **was associated with reduced FEV1 and FVC** at age 6 years.
Transient egg allergy was **associated with reduced FEV1 and FVC** compared with never having egg allergy whereas persistent egg allergy was not.
Transient, persistent and late-onset peanut allergy were **associated with reduced FEV1**.
Food allergy phenotypes were **not associated with an FEV1/FVC ratio** or bronchodilator responsiveness.

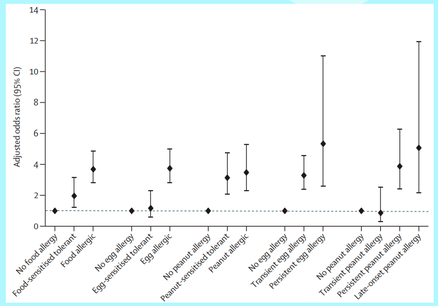
Figure 1. Association between food sensitisation and food allergy at age 1 year or change in food allergy status between age 1 and 6 **years, and FEV1 and FVC z-scores.**



ASSOCIATION BETWEEN FOOD ALLERGY AND ASTHMA

Both **food-sensitized tolerance and food allergy** at age 1 year were **associated with increased asthma risk** at age 6 years.
Persistent and late-onset peanut allergy were associated with **higher asthma risk**.

Figure 2. Primary analyses for the association of food sensitization and allergy exposures with asthma at age 6 years



CONCLUSION

Food allergy in infancy, whether it resolves or not, is **associated with impairments in children's respiratory health at age 6 years.**

This new evidence suggests that **food allergy is an important factor in the atopic march of childhood,** with food allergy associated with a greater risk of asthma development than food sensitized tolerance.
These findings **will assist clinicians to tailor patient care and direct greater vigilance to monitoring respiratory health** of children with food allergies.
Infants **on elimination diets for food allergy are at risk** of poor growth which has implications for lung health.

Further research is needed to **understand the biological pathways underlying these associations** and to **identify potential modifiers**.

Randomized controlled trials examining food allergy prevention strategies present an ideal **opportunity to examine if preventing food allergy can improve respiratory outcomes** in childhood and beyond.
Monitoring children with food allergy for the development of asthma and **ensuring that appropriate management strategies are in place** remains important, because poorly controlled asthma is a risk factor for severe food-induced allergic reactions and anaphylaxis.

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