

# Allergies and Atopic Dermatitis

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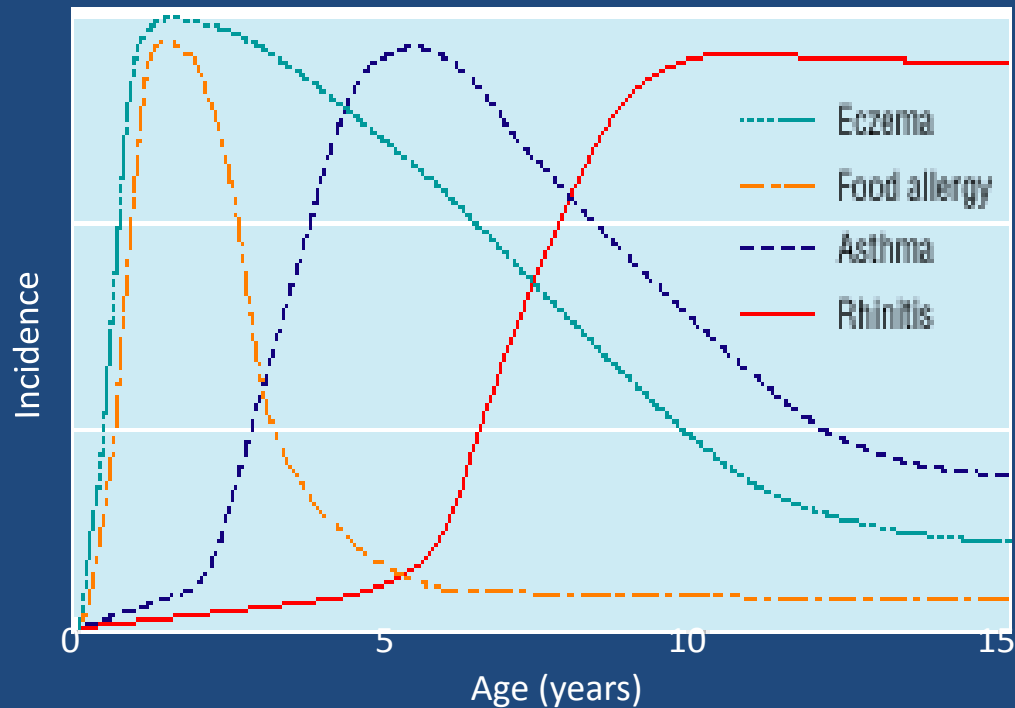
My child have eczema, what will happen long term?

Am I going to get something else?

# Allergies in Atopic Dermatitis

- Risk Factor for developing other allergic disease
- Increases with atopic dermatitis severity
- Risk for asthma
  - 20-50%
- Risk for allergic rhinitis
  - 30-70%

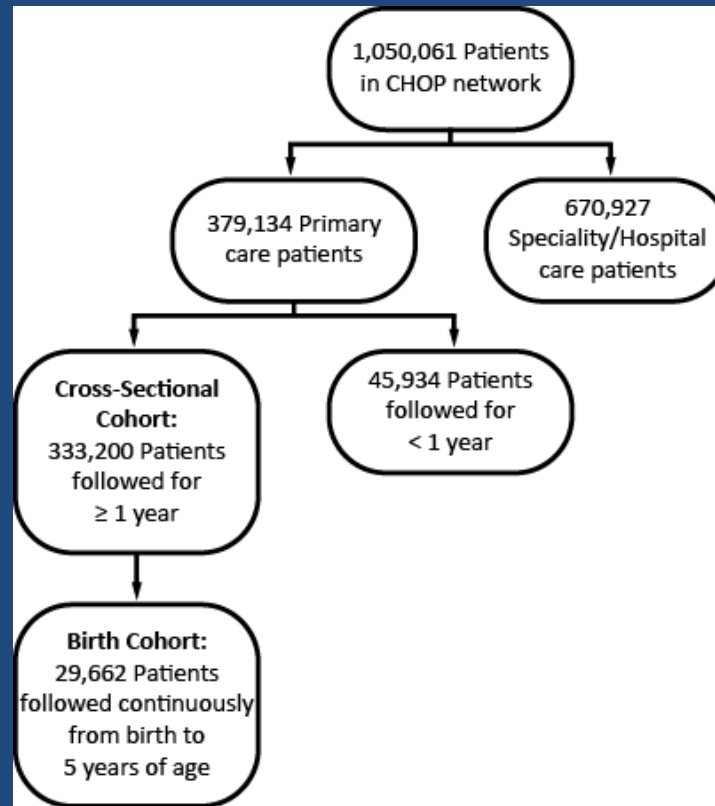
# The 'atopic march'



→ IgE levels in blood

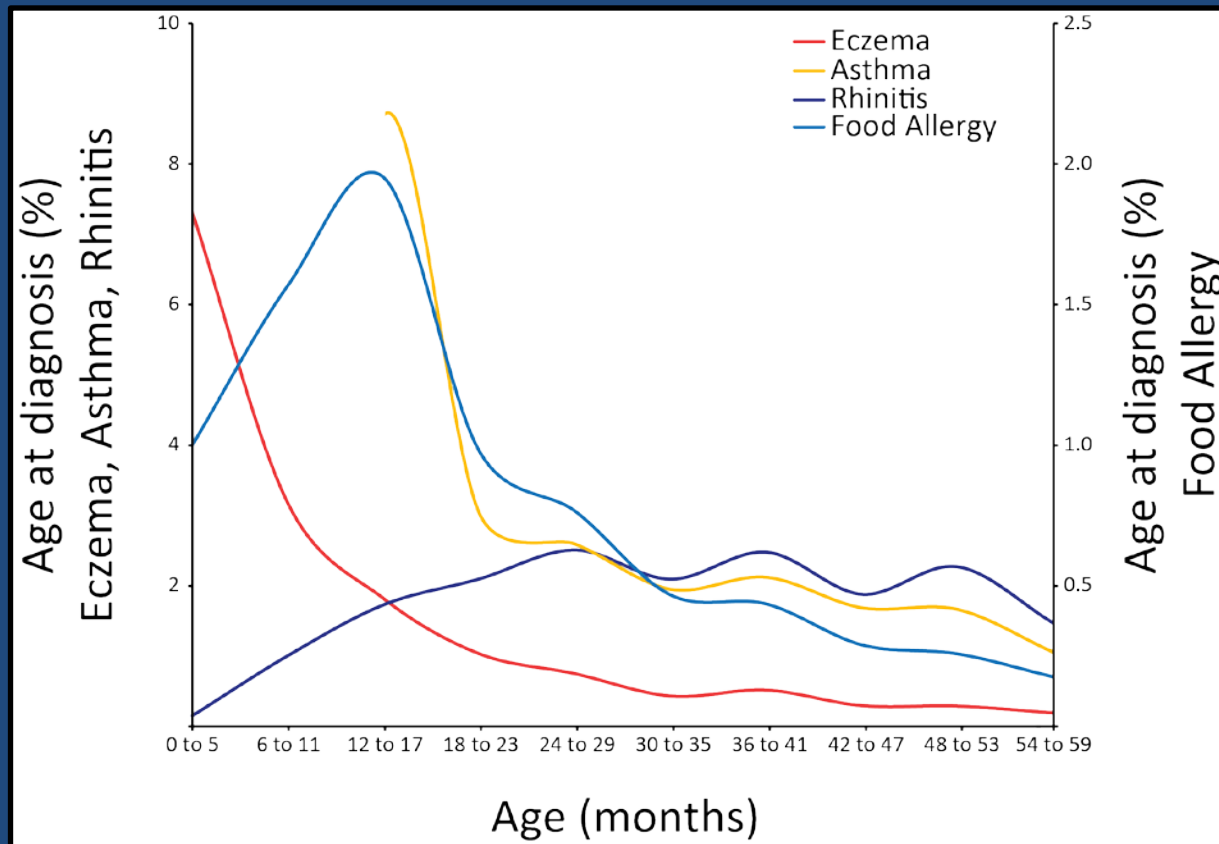
→ In most cases, atopic eczema is the first manifestation of the atopic disposition

# Cohort design



# The Atopic March at CHOP

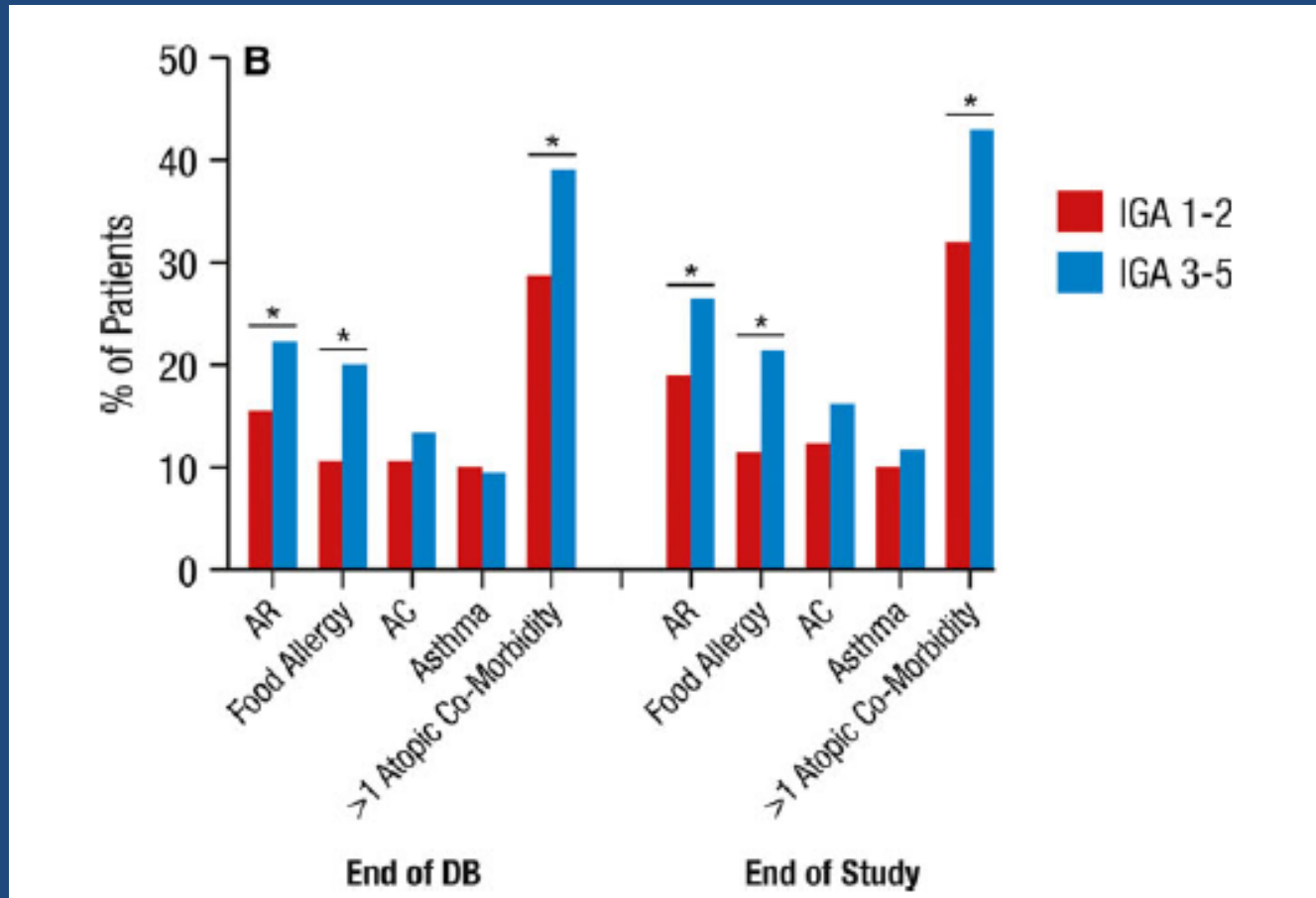
Birth cohort



# Study of Atopic March

- 6 yr study with 3 yr DB placebo control looking at if early treatment with pimecrolimus would slow the atopic march
  - 1091 infants were enrolled
    - 3-18 months with recent onset of AD ( $\leq 3$  months)
  - Study was stopped early due to enrollment loss after FDA warning on pimecrolimus

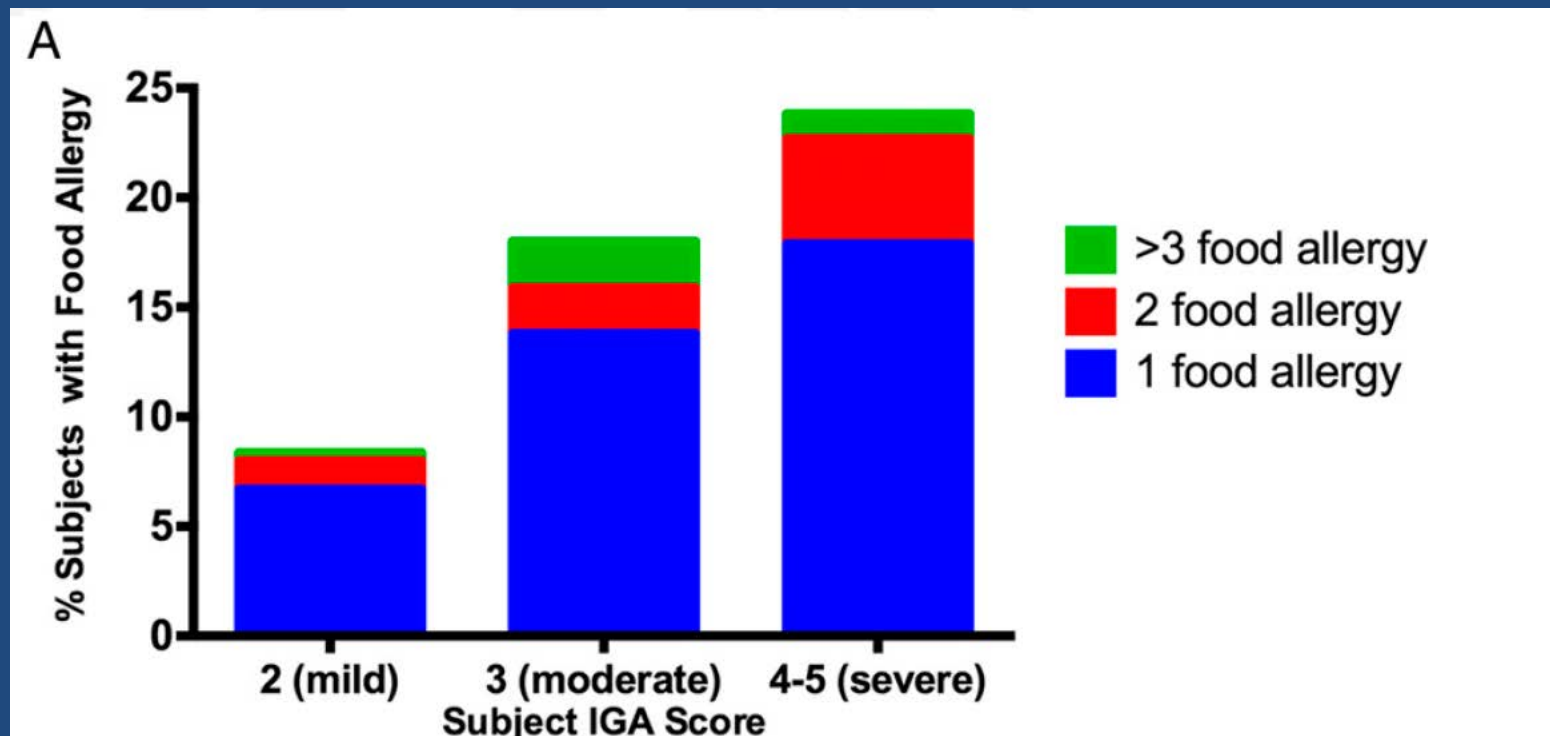
# Study of Atopic March



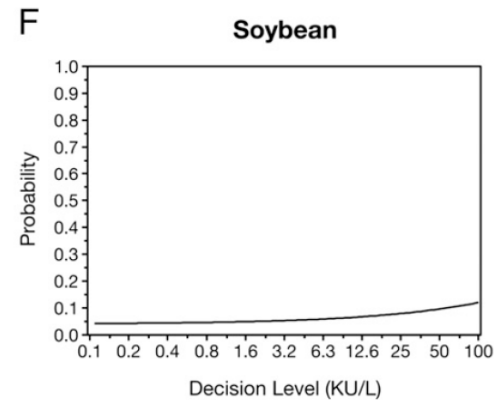
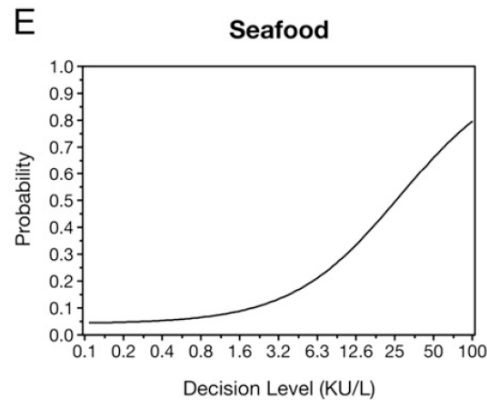
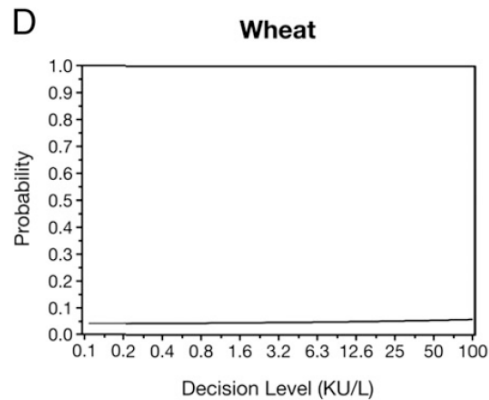
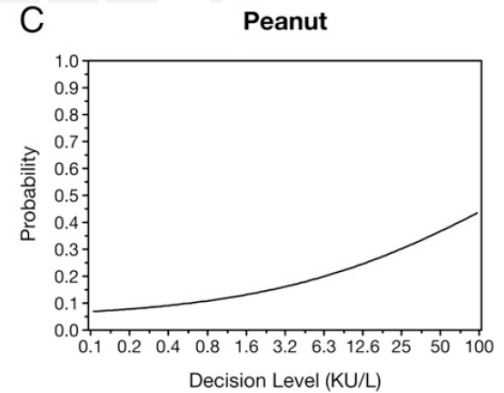
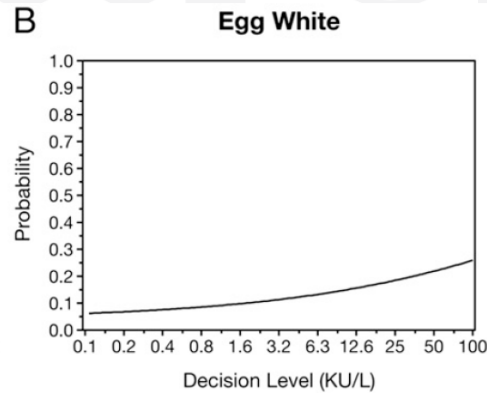
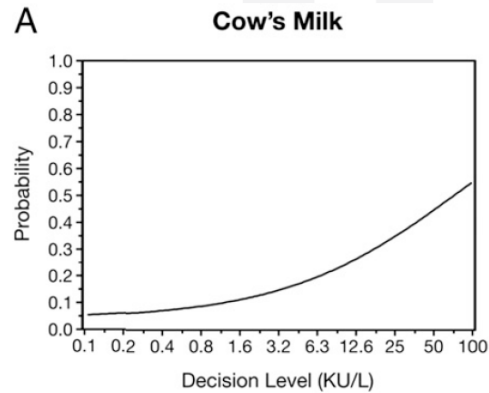


Can a food allergy causing my Atopic Dermatitis?

# SAM Study



# SAM Study



# Foods and Atopic Dermatitis

- Likelihood of atopic dermatitis increases with severity
- Not responding to standard therapy
- In severe Atopic Dermatitis—upto 30%
- Mild, less than 5%
- Egg is the most likely food

# Skin Barrier Disruption is Risk Factor for Food Allergy

- 1355 children followed from birth to 2 years of age
- Increased TEWL risk factor for food allergy or food sensitization with and without AD

	<i>FLG</i> <sub>wt</sub>	<i>FLG</i> <sub>mut</sub>	
FS at age 2 y	43/877 (4.9%)	15/104 (14.4%)	<i>P</i> = .001,
FA at age 2 y	31/876 (3.5%)	12/104 (11.5%)	<i>P</i> = .001,

Predictive factor	Odds ratio	95% CI
Top-quartile birth TEWL	3.1	1.4-6.3

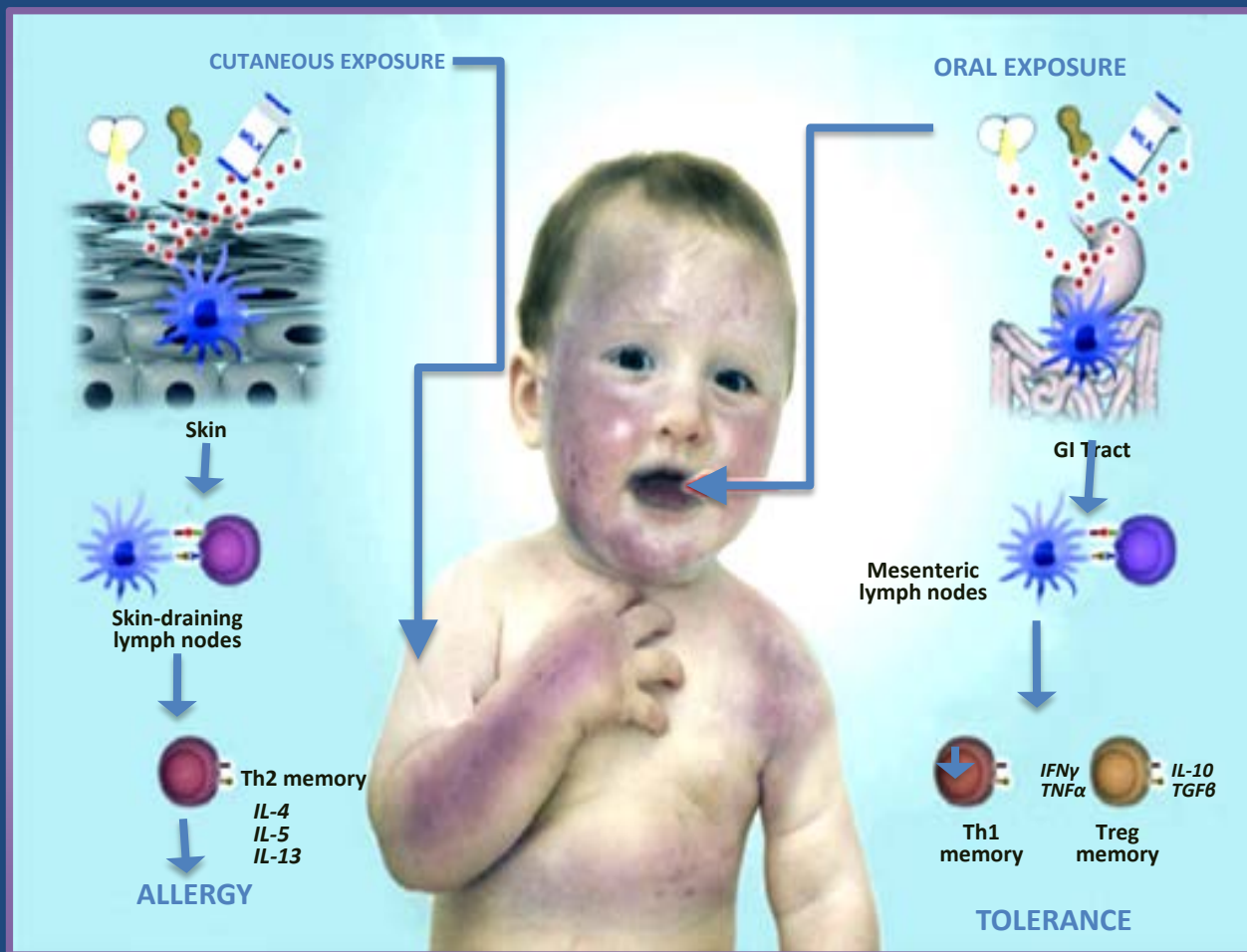
# Asthma Risk from Food Allergy

**Table 4** Asthma risk in patients with food allergy

Exposure	Asthma (%)	OR	95 % CI	p
Food allergy	35	2.16	1.94 - 2.40	5.8E-45
Peanut	31	1.74	1.31 - 2.28	8.8E-05
Milk	26	1.38	1.09 - 1.73	5.7E-03
Egg	29	1.60	1.12 - 2.27	8.8E-03
1 food	26	1.43	1.23 - 1.64	1.5E-06
2 foods	40	2.75	2.20 - 3.42	3.0E-19
3 foods	49	3.94	2.89 - 5.37	3.9E-18
4 foods	56	5.44	3.40 - 8.78	2.2E-12

Why should I care about my eczema? Does it make anything worse?

# Dual-Allergen Exposure Hypothesis





# AD Severity

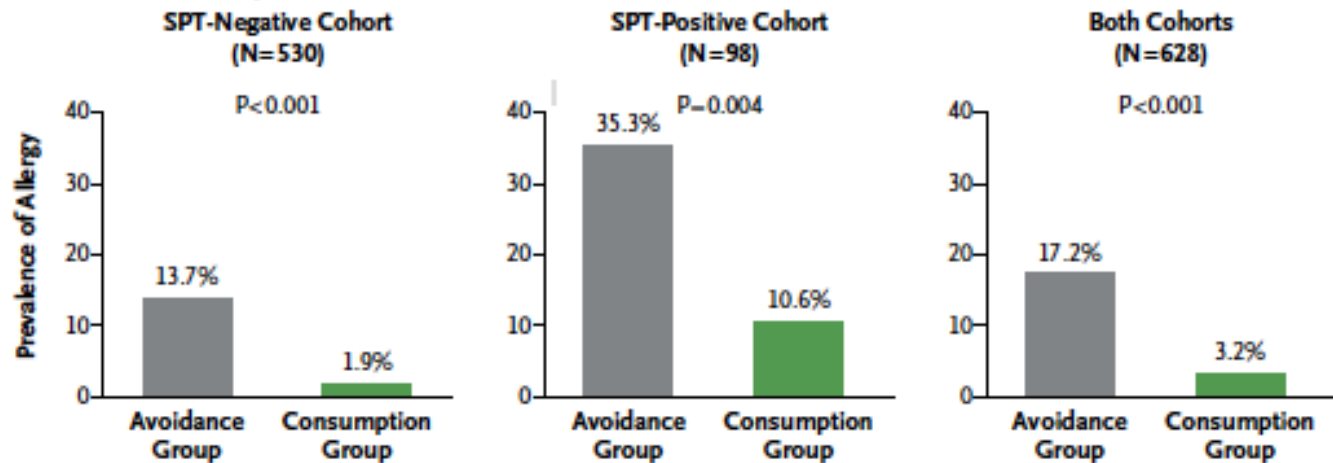
- Increase AD severity increases the rate of food allergy
- Sensitization of AD through the skin leads to asthma, Food Allergy
- Increase sensitization to allergens (food and environmental)

# LEAP Study

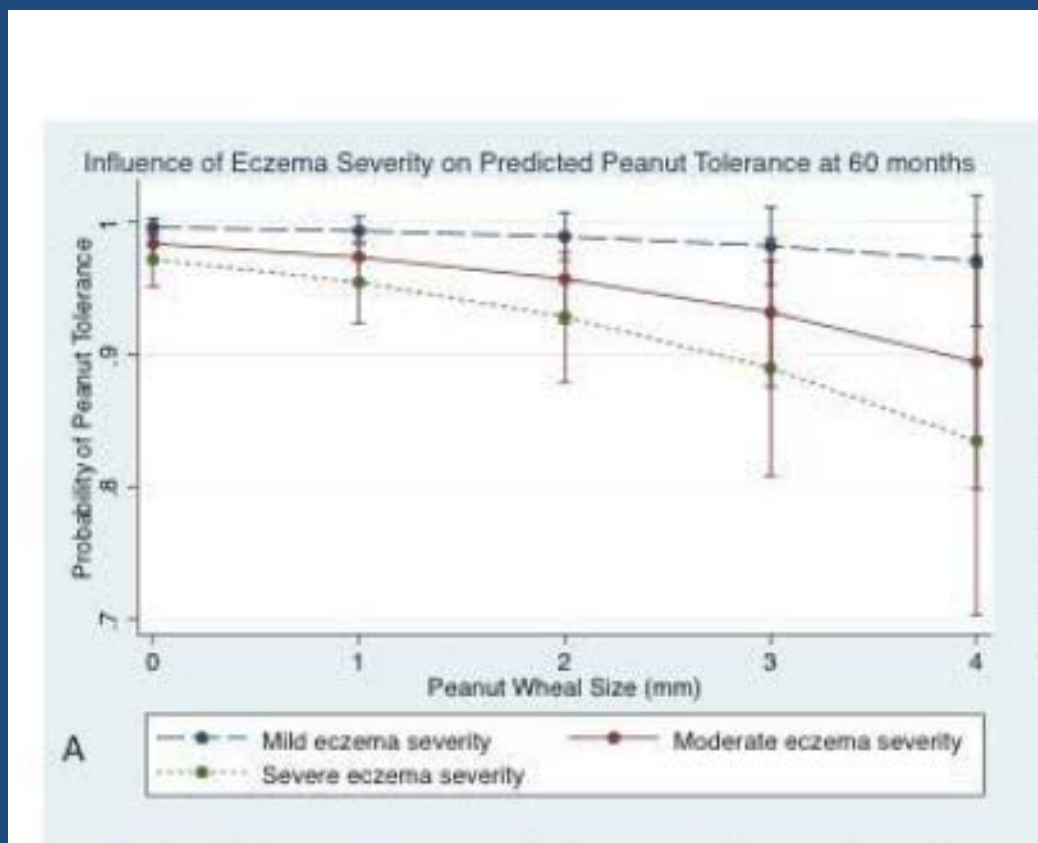
- 640 children with severe AD and/or Egg Allergy
- 4-11 months of age
- If skin test  $< 4\text{mm}$ , randomized
  - Peanut 3 times a week- 6gm/week
  - Placebo 3 times a week
- Food challenges at 60 months of age

# LEAP Study

## A Intention-to-Treat Analysis



# What about Eczema Severity?



# Expert panel recommendations: no eczema

- No evidence exists for restricting allergenic foods in infants without known risks for food allergy.
- Infants without eczema or any food allergy should have age-appropriate peanut-containing foods freely introduced in the diet together with other solid foods and in accordance with family preferences and cultural practices.

# Expert panel recommendations: mild-moderate AD

- Introduction of age-appropriate peanut-containing food around 6 months of age.
- Other solid foods should be introduced before peanut-containing foods to show that the infant is developmentally ready.
- Dietary peanut should be introduced at home without an in-office evaluation.

# Expert panel recommendations: severe eczema $\pm$ egg allergy

- Infants with severe eczema, egg allergy, or both should have introduction of age-appropriate peanut-containing food as early as 4 to 6 months of age to reduce the risk of peanut allergy.
- Other solid foods should be introduced before peanut-containing foods to show that the infant is developmentally ready.
- It is strongly encouraged that infants be evaluated with peanut-specific IgE (peanut sIgE), SPTs, or both before introduction of peanut.

Can my pet make my allergy worse?



# Environmental Allergies

- AD increases risk of seasonal allergies
- AD and allergies can be exacerbated by indoor allergens
- Environmental allergies exacerbating AD
  - "T-shirt" sign
  - AD on air exposed skin
- Cat and dog dander levels are measurable in most schools

# But

- Having pets early in life prevents
  - Asthma
- Need 2 cats or large dogs

Table 4 Poisson regression analysis of home exposure and association with quantity of asthma episodes

	Asthma Episodes* Odds Ratio (95% confidence interval)	p Value
Cat exposure	0.48 (0.31, 0.67)	<0.001
Daycare exposure	0.36 (0.26, 0.50)	<0.001
BMI	1.07 (1.12, 1.13)	0.02
Maternal asthma	1.31 (0.98, 1.74)	0.07
HDM 3 years	1.01 (1.00, 1.02)	0.005

\*Model also included age, race, sex, household income, treatment assignment, and total IgE at 3 yr; Significance  $p \leq 0.01$  for multiple testing.

BMI = body mass index; HDM = house-dust mix.