Top 10 Allergy Questions and Myths That Pediatric Allergists Are Asked

Harvey L. Leo, MD
Associate Research Scientist
University of Michigan School of Public Health
Learning objectives

- Review common allergy related topics that families present to primary care providers
- Provide data to support responses
- Dispel myths that are perpetuated regarding allergies
Disclosures

- Commercial: None
- Research support: APFED, BCBS Foundation of Michigan
This talk “may contain”

- The “May contain”; “Manufactured in”; “Processed on equipment” or other such terminology does not help or resolve the likelihood of reactivity or tolerance.

- Many families ignore these labeling statements and there is no consensus on what risks persist.
  - Studies suggest less 20% adhere to warnings.

- Most experts believe the risk is generally low, but not non-existent.

- An example is “This deli meat may contain listeria too”. Recalls do happen. Families should be prepared for possible reactions with any cross contamination.
Every rash with Amoxicillin is bad

In keeping in the spirit of good antibiotic stewardship
Penicillin allergy

- Rashes are common with the administration of amoxicillin and other beta-lactam antibiotics
- Many rashes are viral exanthems and not indicative of IgE anaphylaxis
- Only 6% of children have been shown to be sensitized to beta-lactams and only 4-9% of these children are positive on testing
- Pre-pen (benzylpenicilloyl polylysine) testing is can be performed in adults, but is not approved in children per the package insert

PCN allergy

- There is approximately a 10-30% cross reactivity within beta-lactam classes, specifically PCN and 1\textsuperscript{st} generation cephalosporins
- Cross reactivity with 2\textsuperscript{nd} or 3\textsuperscript{rd} generation is less likely to occur
- Atopy may appear to be a risk factor for drug allergy for beta-lactams
- Family history typically is not a risk factor for beta-lactam allergy
Ugh Organic chem!!

Penicillin

Amoxicillin

Cephalopsorins

1st Gen Ceph

3rd Gen Ceph
Skin testing can trigger anaphylaxis
Yes, it can happen

- Systemic reaction rate was 77 per 100,000 patients over a 6 year period
- Most common triggers were nuts and occasionally some environmental triggers i.e., grass.
- Larger the SPT reaction i.e., wheal, the higher likelihood of systemic reaction
- Most reactions can be treated in the clinic

Grandpa is allergic to bees

So do we test Johnny???
Insect stings are not hereditary

- There is no evidence that insect sensitivity is determined by true genetic factors.
- One risk for insect sting anaphylaxis is underlying mast cell disease, i.e., mastocytosis.
- Several studies have noted that serum tryptase levels >11 ng/ml can indicate mast cell disease and should be evaluated.
- In children, large local reactions are not indication for additional testing.
- SC immunotherapy is a viable and efficacious treatment option for sensitized individuals.
My doctor says we can’t allergy test before 3 years old
Yes, it can be done

- Infants can produce reproducible reactions to both SPT and measurable specific IgE levels within the neonatal period.
- There is some lag, but by 3-6 months testing can be fairly accurate for food allergens.
- These findings form the basis of testing modalities in terms of implementing screening for infant food allergies in the LEAP study.
- Seasonal allergens typically don’t become clinically relevant until 2-3 years of age except for perennial allergens such as DM, Dog, Cat.
Strawberry and other berries trigger anaphylaxis
Strawberries do not cause anaphylaxis

Strawberries can contain histamine-like substances and can cause contact dermatitis and urticaria. They also contain similar proteins associated with the oral allergy syndrome ie Bet v 1 proteins.
My egg allergic child cannot get the influenza or MMR vaccine

Another waiver for you to sign
Yes they can!

- Multiple studies and updated policies including the AAP Redbook, note that egg allergic individuals can be given the SC inactivated influenza vaccine.
- The amount of ovalbumin in 0.5ml vaccine is <1 mcg.
- Conservatively, influenza vaccine can be given with a 30 minute observation period afterwards if needed (especially with a history of severe egg anaphylaxis).
- The MMR vaccine is incubated in chick embryos but contains minimal amounts of egg protein and is considered safe.
- Gelatin allergic children can react to the MMR vaccine.

Kelso JM. J Allergy Clin Immunol Pract. 2015 Jan-Feb;3(1):140-1
Peanuts are the most deadly allergy
The other foods

- Although peanut receives the most attention other foods still play a role in fatal outcomes.
- In retrospective studies, cashew was more prevalent than peanut in poor outcomes.
- Milk and shellfish also were implicated almost as often as peanut and nuts.
- If appropriately diagnosed, many foods have potential to trigger significant reactions.
Let’s double the ICS for a few weeks
Didn’t help

- Cochrane review in 2016 did not find any impact of increasing ICS dosing in acute exacerbations
- Additional meta-analysis of acute add on therapy did not demonstrate improvements in outcome
- Bonus note: In children there is no solid evidence to support either MDI/Spacer vs Nebulizer efficacy as superior to one another. Other non-measurable factors likely play a role.


Kew KM. Increased versus stable doses of inhaled corticosteroids for exacerbations of chronic asthma in adults and children. Cochrane Database Syst Rev. 2016 Jun 7;(6)
Inhaled steroids stunted her growth
Yes it’s real

- Multiple studies have shown that ICS can have some effects on both growth velocity and adult height.
- Overall, the consensus is that the effects are minimal (1 cm adult predicted height) and that benefits outweigh these risks.
- There is another piece of data worth considering in this discussion.

The real long term problem

- Asthma and untreated asthma has long term consequences including declines in lung function
- Clearly short term effects ie daily symptoms are problematic
- Risk factors for COPD increase in untreated asthma

We just got our hypoallergenic dog!!
All dogs are the same

In the 2012 Lockey study, allergen profiles in the hypoallergenic breeds ie poodles, labradoodles, and others actually contained higher amounts of Can f 1 the major dog allergen.
Cat’s were no better.

Genetically engineered hypoallergenic cats may shed less Fel d 1 than other cats, but still produce minor allergens which can be just as sensitizing. These cats are sold for approximately $4,000-10,000.
Expired Epinephrine auto-injectors can work?

Yes, that’s a 15 year old Epi-Pen
A very unstable molecule

- Expired epinephrine loses over 50% of its efficacy at 4-6 months under ideal conditions
- Similar studies demonstrated significant impact on both hot and cold temperatures on auto-injectors as well

My child’s RAST to peanut is >100ku/L

Let’s save this for another talk
Diphenhydramine should not be used for anaphylaxis
Diphenhydramine is good for hives

- Sheikh et al completed a Cochrane analysis which found no current support of the use of antihistamines as first line treatment of anaphylactic reactions.

- As the evidence suggests that H₁-antihistamines are effective only in some less severe allergic disorders; that administration of H₁-antihistamines may cause important side-effects, and that the existing studies investigating their role in anaphylaxis have used suboptimal study designs.

- There is controversy within schools and amongst policy makers whether antihistamines should be listed on food allergy action plans.

My child has an airborne allergy to peanuts

And by the way his Peanut number is off the scale.....
Airborne issues

- Roberts et al examined 9 children with an IgE-mediated food allergy who developed asthma on inhalational exposure to food.
- The implicated foods were fish, chickpea, milk, egg or buckwheat.
- Five bronchial challenges were positive with objective clinical features of asthma.
- Additionally, two children developed late-phase symptoms with a decrease in lung function.
- Positive reactions were seen with fish, chickpea and buckwheat.
- There were no reactions to the seven placebo challenges.

Likelihood of anaphylaxis to airborne food allergies

- In a study by Johnson et al, total peanut allergen and subcomponents Ara h1 and Ara h2 were measured in several scenarios:
  - removing shells of roasted peanuts
  - bags of peanuts were opened,
  - peanut flour was poured from a cup,
  - jars of peanut butter were opened

- Peanut allergen was detected only when shells were being removed and also in the vapor when peanuts were being boiled, though the amount of allergen was near the level of detection for the assay.

- Likelihood of triggering an anaphylactic reaction is very unlikely

Contact with allergen triggering anaphylaxis

- Simonte et al challenged 30 proven peanut-allergic children with peanut butter by applying it to their skin in a double-blind, placebo-controlled manner.

- None of the patients experienced a systemic reaction though three had erythema at the site of application.

- These findings were confirmed by Waintstein et al in which children who were skin-reactive and had a positive oral challenge to peanut had peanut applied to their skin for 15 min.

- None of the children and particularly none of those who developed erythema or even urticaria from this prolonged cutaneous exposure to peanut experienced a systemic reaction.


Some very last minute PEARLS

- Asthmatic coughs are more typical in the middle of the night ie 3am-6am unlike neurogenic tics which are during transition times
- MOST food allergy urticaria lasts less than 24 hours
- Chicken Pox Vaccine contains no chicken or eggs
- Allergy testing doesn’t always help in atopic dermatitis or eosinophilic esophagitis
- Coconut is not a nut, even though the FDA says otherwise
- Kiwi can act like a tree nut (Just the green not golden)
- When doing a food allergy history ask about pet food ingredients too
- Intranasal steroids work “better” than antihistamines for rhinitis symptoms assuming compliance is good
Finishing up

- As a result of attending my lecture at the 2017 Practical Pediatrics CME course, I encourage you to make the following change in your practice:
  - Allergic disorders are common in pediatric practice
  - Having evidence based information to clarify misunderstandings for families is essential
  - Every patient interaction is an opportunity to educate families