

Is The Whole World Becoming Allergic?

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Take Home Messages

- Forget everything you learned about the sequencing of introducing new foods to infants
- Play in the dirt
- Kiss animals

What is Happening to Our Immune Systems?

Immune Suppression

Chemotherapy/ corticosteroids/ viruses/ absence of immune cells
iatrogenic

Normal Immune Function

HYPER-IMMUNE FUNCTION

AUTOIMMUNITY/ AUTO-ALLERGY

ALLERGY

AUTOIMMUNE / AUTO-ALLERGY

- **Type 1 Diabetes Mellitus**
- **Celiac disease**
- Systemic Lupus Erythematosus
- Juvenile Idiopathic Arthritis
- Idiopathic Thrombocytopenic Purpura
- Dermatomyositis
- Scleroderma
- Hashimoto's Thyroiditis
- Kawasaki disease
- Rheumatic Fever
- Acute Glomerulonephritis
- Henoch Schonlein Purpura (vasculitis)

Type 1 Diabetes

- Increasing 1.8% per year (males>females)
- Especially increasing in Hispanic youth
- Affects 0.24% of children under age 20
- Increase thought to be caused by environmental factors
 - Hygiene theory
 - Viruses

Increasing Prevalence of Allergy

- Approximately
 - 9% of children and youth have respiratory/seasonal allergies
 - 8% have food allergies
 - 30% are allergic to more than one food
- Respiratory allergies are static BUT
 - Skin allergies increased
 - Food allergies increased 50% from 1997-2011

Why the increase

- Hygiene theory
 - Exposure to a variety of infectious agents is protective
 - Allergy is higher in industrialized nations
 - Decreased exposure to dirt and germs
 - Overuse of bacterial cleansers.
- Allergy and asthma are lower on farms!!!

Why the increase

- Genetics
 - 50%-70% chance of allergy if both parents are allergic to something
 - 30% chance of allergy if one parent is allergic to something
 - Results in an increased tendency to make increased amounts of IgE
 - DOES NOT DICTATE WHAT TYPE OF ALLERGY ONE WILL HAVE
- Pesticides???
- Plastics???

What is an allergy?

- “A chronic condition involving an abnormal reaction to an ordinary harmless substance called an allergen” (AAAAI, 2017)
- Allergy can be either
 - Type 1, IgE-mediated, Immediate
 - Type IV, Non-IgE-mediated, Delayed
- spectrum of reactions
- Only 3 systems affected: Respiratory, Skin, G.I.

The Allergic March

- Atopic dermatitis – Infant (eczema)
- Food allergy – Toddler/ preschool
- Allergic rhinitis and asthma – School-age
- No empirical support that delaying introduction of solid foods after 4 months will delay the development of allergy
 - Just the opposite may be true; early introduction may decrease the risk

ISSUE # 1: Is it an allergy? Allergy vs. Intolerance

- Mostly with food allergies
- ALLERGY STIMULATES THE IMMUNE SYSTEM; INTOLERANCE DOES NOT
- Food intolerance is a deficit of an enzyme interfering with foodstuffs being broken down
- Symptoms may be the same, but this is NOT allergy
 - Discomfort
- Lactose – milk/ dairy
- Gluten – wheat/rye/barley/oats
 - CELIAC DISEASE IS AUTOIMMUNE CAUSING DAMAGE

ISSUE # 2: Are you really allergic to it?

- Coincidental rashes does not mean allergy
- Penicillin (less than 10% actually have a PCN allergy)
- Often it is the additives – not the food
- Fabrics: irritating or allergic
- But there are some 'strange' allergies
 - Certain wavelengths of the sun
 - Scents/ colognes/ aromatherapy, craft glue, permanent markers
 - Chemicals in cleaning products/ personal care products/ aspartame
 - Cold

ISSUE # 3: But I didn't have a reaction the last time I ate that!!!

- The first contact with an allergen, the body makes IgE
 - But there are no signs of allergy
- IgE plants its tail in basophils or mast cells
 - Under epithelial surface of skin, in mucosal lining of nose and upper airway, in conjunctival lining of eyes and along G. I. tract.
 - These are all routes by which allergens enter
- On second contact, IgE makes contact with the allergenic markers and wiggles its tail to have mast cell release products
 - HISTAMINE

Histamine

- The more allergen - The more IgE is made the first time
 - The more IgE – the more histamine is released on subsequent encounters
 - Symptoms usually occur within 10 minutes

 - Histamine is locally irritating
 - Itchy eyes, ears, throat; irritated watery eyes; hives/ itchy skin
 - Histamine increases permeability of vessels → histamine into tissue
 - Hives
- (Mast cells also release leukotrienes and heparin)

ISSUE # 3: Anaphylaxis Antihistamines vs. Epinephrine

- In large doses, histamine causes
 - Smooth muscle constriction → bronchoconstriction
 - Increased fluid loss from vessels → hypotension → hypovolemic shock
- Itch all over, wheeze, anxiety, mental changes
- GIVE EPINEPHRINE
 - Reverses shock
 - 0.15 mg for children < 66 pounds; 0.3 mg for > 66 pounds
 - Auviq has dose for toddlers
 - IM – hold for 3 seconds (5 seconds for Auviq)
 - Repeat in 5-15 minutes if not resolved (may take 30-60 minutes to completely resolve)
 - Call 9-1-1 and KEEP CALM
 - THERE ARE NO CONTRAINDICATIONS FOR EPI

- Most fatalities occur outside of the hospital
- 20% have their first anaphylactic episode in school
 - Food is #1
 - Insect stings is #2
- Anaphylactic reactions are amplified by:
 - Exercise, alcohol, use of NSAIDS, having an infection/fever, and emotional stress
- Skill of using the Epi autoinjector is lost after a few months
 - Must retrain 3-4 times per year
 - Do you know how to recognize the signs and symptoms of anaphylaxis
 - Where do you keep the epi and who can give it.

- Beware of the BiPhasic Reaction
 - IgE reaction generally occurs within 10 minutes
 - The early phase resolves in 1-3 hours
- 20% experience a resurgence of symptoms in 6-12 hours after original anaphylaxis
 - Secondary inflammatory response; can last 24 hours
 - Same treatment with Epi
 - Do not leave the child alone

ISSUE # 4: EPI – Business or Humanitarian

- All business
- Each EpiPen actually costs the company \$20 – Mylan charges \$600
 - 500% hike since 2007
 - Made generic version for \$300
- Shop around – check with insurance
- Alternative – Adrenaclick
- Insurance concerns:
 - Only get 2
 - Epinephrine in schools

ISSUE #5: Food Allergy Challenges

- 8 foods cause 90% of allergies in US
 - Cow's milk, tree nuts, peanuts, eggs, fish, wheat, soybean, shellfish
 - Sesame = 9th
- Can outgrow milk, eggs, wheat and soy; NOT PEANUTS
- It may not be the food – it may be the food additive.

- 6% of children <6
- 3.5-4% of general population
- Food allergy increased 18% in one decade (1997-2007) and peanut increased 4-fold

Food products are everywhere

- Egg in immunizations
 - YES they can get flu and MMR if given in medical setting with supervision
- Play Doh and Clay (wheat)
- Finger paint (wheat, corn, milk, soy)
- Paste (wheat)
- Crayon (soy)
- Balloons and rubber bands (latex)
- Chalk (casein – a milk protein)
- Stuffed animals may be filled with wheat or rice
- Paper mache (wheat)

Exciting advances in peanut allergy

- Early introduction of peanut between 4 and 11 months of age → significant decrease in chance of developing allergy by age 5
 - Infant-safe form of thinned peanut butter with warm water and mixed with fruit or vegetable
- Peanut oral immunotherapy
- Successful in 80% of those at risk
- LEAP study – Learning Early About Peanut Allergy

Food Allergy Tidbits

- Smelling peanut butter does NOT cause an allergic reaction; However, peanut dust can accumulate on surfaces
 - Wipe down tables with soap and water
- Oral-allergy syndrome (Pollen-food allergy syndrome)
 - Allergy to birch/ ragweed/ mugwort pollen react to plant proteins
 - Birch pollen: apple, almond, carrot, celery, cherry, hazelnut, kiwi, peach, pear, plum.
 - Grass pollen: celery, melons, oranges, peaches, tomato.
 - Usually uncooked fruits and vegetables
 - Usually just the mouth and throat
 - Usually do not need treatment
- Oral food challenge is gold standard; do not try at home

More allergy tidbits

- Hives is urticaria; heat makes urticaria worse (use cool compresses and antihistamine)
- Pollen is highest in the morning, on windy days and when grass is mowed
- Get daily pollen counts from the National Allergy Bureau
- Mold does not die with frost; it just goes dormant
- Allergies to insects, pets, and cockroaches is actually an allergy to their skin (dander), saliva, or feces proteins
- There is no evidence of non-allergenic pets
 - Early exposure is protective

More allergy tidbits

- Latex allergy
 - Can be IgE or non-IgE
 - Can be contact or respiratory
 - **Can cross react with foods (banana, avocado, chestnut, kiwi)**
 - Present in blood pressure cuffs, stethoscope, rubber stoppers in medication vials, rubber bands, erasers, bike tires, swimming goggles, gym mats, balloons
- The metal that causes most skin allergy is nickel (piercings!!!)
- The topical medication that causes most skin allergy is neomycin

More allergy tidbits

- Allergy shots = immunotherapy - sq
 - INCREASING doses of allergen
 - NOT for food allergy, atopic dermatitis, and chronic urticaria
- New sublingual med for seasonal allergy, especially ragweed
 - Has oral and gastrointestinal side effects

Managing Food Allergies

- No-Nut Table
- No bake sales
- No food at birthday parties or holidays
- No sharing food

Interventions

- Decrease exposure
- Help children learn how to ask for help
- Advocate
- Develop a 504/ Accommodation plan in the school – reasonable accommodations
- READ LABELS – beware of hidden ingredients; beware of using the same surface, the same spoon
- Skin care – soak and seal (moisturizer applied while still damp)
 - Eucerin, Aquaphor, Aveeno, Cetaphil, Vasoline
 - Do not apply these over other topical medication

Questions to ask

- Why aren't there signs in arts and crafts stores of what is in products?
- Who teaches art teachers or scout leaders or regular teachers about allergens in crafts?
- Who teaches coaches about environmental allergens and what to do?
- How young can they be to self-carry
- How can parents get babysitters and what training do they need