FOOD ALLERGY & ANAPHYLAXIS

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Objectives

• Define the allergic response
• Discuss oral tolerance in the mucosal immune system
• Provide an overview of specific food hypersensitivities
  • PFAS, EE, EGID, Eczema, Anaphylaxis
• Recognize and manage anaphylaxis
• Understand how to use an EpiPen
• Discuss Key Features of Peanut Allergy
The Allergic Response

- A misguided immune response to an otherwise harmless antigen.
- In food allergy – an abnormal mucosal immune response
- Excessive response in light of the normally down regulated immune response in the mucosa
Mucosal Immune System

- A collection of lymphocytes and APCs in the GI and respiratory tracts
- Continuous exposure to foreign antigens – proteins, carbohydrates, lipids, bacteria
- Tolerance: the down-regulation of response to foreign antigens

The mucosa as a barrier

- The mucosa acts as a barrier to prevent penetration of antigens
  - Physical barrier with epithelial cells, tight junctions, and thick mucus layer
  - Chemical barrier with brush border enzymes, bile salts, pH
- Innate and adaptive immune responses also act to support the barrier function

Mucosal Immune System

• Very different from the systemic immune system

• Systemic immune system:
  • Very little exposure to foreign antigens
  • Mounts a brisk inflammatory response

• Mucosal Immune System:
  • Regularly encounters enormous quantities of antigens
    • Proteins, carbohydrates, lipids, bacteria
  • Must suppress immune reactivity to food and harmless foreign commensal organisms

Oral Tolerance

• Approximately 2% of ingested food antigens are absorbed in an immunologically intact form
• Food antigens absorbed rarely cause clinical symptoms

• Oral Tolerance: An active, antigen specific process resulting in lack of response to antigen given orally
Breakdown of Oral Tolerance

• Leads to food allergy
• Mechanism is not well understood

• **Hypotheses:**
  • Increased intestinal permeability
  • Antigen presentation via atypical route
    • Increased incidence of peanut allergy in AD with use of topical emollient containing peanut oil
  • Defects in regulatory T cells
Food Intolerance

• Approximately 20% of the population alters their diet due to a perceived food intolerance

• Food Intolerance is broadly defined as any adverse reaction to food
  • Metabolic disorder (lactose intolerance)
  • Pharmacologically active component (caffeine)
  • Toxic component (food poisoning)

• Food allergy is an immune mediated response to food antigen
  • IgE mediated, cell mediated or mixed
Prevalence of Food Allergy

Estimated food allergy rates in North America

<table>
<thead>
<tr>
<th>Prevalence</th>
<th>Infant/Child</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>2.5%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Egg</td>
<td>1.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Peanut</td>
<td>1%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Tree nuts</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Fish</td>
<td>0.1%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Shellfish</td>
<td>0.1%</td>
<td>2%</td>
</tr>
<tr>
<td>Wheat, soy</td>
<td>0.4%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Sesame</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Overall</td>
<td>5%</td>
<td>3% to 4%</td>
</tr>
</tbody>
</table>

Food Allergy Disorders

- IgE Mediated
  - Anaphylaxis
  - Pollen-Food Allergy Syndrome
  - Urticaria

- Cell Mediated
  - Food Protein Induced Enterocolitis
  - Food Protein Induced Enteropathy
  - Food Protein Induced Proctocolitis

- Mixed IgE and Cell Mediated
  - Eosinophilic Esophagitis
  - Eosinophilic Gastrointestinal Disease
  - Atopic Dermatitis
Pollen-Food Allergy Syndrome

- Also called - Oral Allergy Syndrome
- IgE mediated
- Example of class 2 food allergy
  - Sensitization to proteins via respiratory route
  - Development of IgE antibody that recognize homologous epitopes on food proteins

- Symptoms:
  - Mild pruritus, tingling and/or angioedema of lips, palate, tongue or oropharynx

- Proteins in fruit or vegetable is homologous to the pollen

- Cooked forms of fruit/vegetable do not induce symptoms
Pollen-Food Allergy Syndrome

- Symptoms usually limited to the oropharynx as proteins are easily digested
- Review of 1361 patients
  - 9% reported symptoms outside of the GI tract
  - 3% reported systemic symptoms without oral symptoms on at least one occasion
  - 1.7% reported anaphylaxis

- Indications for prescribing epinephrine
  - History of systemic reaction
  - Reaction to cooked form of food
  - Food implicated is peanut, tree nut or mustard

Ortolani et al. Ann Allergy. 1993;71(5):470
## Pollen Food Allergy Syndrome

<table>
<thead>
<tr>
<th>Pollen</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birch</td>
<td>Apple, peach, plum, pear, cherry, apricot, almond, carrot, celery, parsley, soy, peanut, hazelnut</td>
</tr>
<tr>
<td>Ragweed</td>
<td>Cantaloupe, honeydew, watermelon, zucchini, cucumber, banana</td>
</tr>
<tr>
<td>Mugwort</td>
<td>Celery, carrot, parsley, bell pepper, black pepper, mustard, cauliflower, garlic, onion</td>
</tr>
<tr>
<td>Orchard</td>
<td>Cantaloupe, honeydew, watermelon, peanut, white potato, tomato</td>
</tr>
<tr>
<td>Timothy</td>
<td>Swiss chard, orange</td>
</tr>
</tbody>
</table>

**Cross-reactivity patterns in pollen-food allergy syndrome (oral allergy syndrome):**

- **Birch:** Apple, peach, plum, pear, cherry, apricot, almond, carrot, celery, parsley, soy, peanut, hazelnut
- **Ragweed:** Cantaloupe, honeydew, watermelon, zucchini, cucumber, banana
- **Mugwort:** Celery, carrot, parsley, bell pepper, black pepper, mustard, cauliflower, garlic, onion
- **Orchard:** Cantaloupe, honeydew, watermelon, peanut, white potato, tomato
- **Timothy:** Swiss chard, orange

Eosinophilic Gastroenteropathies

- **Eosinophilic Esophagitis**
  - More likely to be responsive to food elimination
  - Rare, but increasing prevalence
  - Symptoms: gerd, dysphagia, emesis
  - Often involves avoidance of many foods
    - Six food elimination diet
    - Elemental formula
    - Cow’s milk

- **Eosinophilic Gastrointestinal Disease**
  - Less likely to be responsive to food elimination
  - Essentially involves eosinophilic infiltration of gut
  - Mechanism appears to be both IgE mediated and cell mediated
Controversial

Food allergy plays a role in up to 40% of patients with moderate to severe AD

- Especially in cases that begin in infancy

Laboratory evidence:
- Intact food proteins can enter circulation and be distributed throughout the body, including skin
- Casein specific T cells have been demonstrated in patients with AD exacerbated by CM

Clinical evidence:
- Food avoidance improves AD, reintroduction associated with flare

Diagnosis with SPT or APT

Anaphylaxis

• Diagnosis is highly likely when and 1 of 3 criteria are met:

  • Acute onset of an illness (minutes to hours) with involvement of skin, mucosal tissue, or both (such as hives, pruritus, swelling) AND at least one of the following:
    • Respiratory compromise
    • Reduced BP or evidence of end organ dysfunction

  • 2 or more of the following that occur rapidly after exposure to a likely allergen (minutes to hours):
    • Involvement of skin-mucosal tissue
    • Respiratory compromise
    • Reduced BP or associated symptoms (collapse, syncope, incontinence)
    • Persistent GI symptoms (cramping abdominal pain, vomiting)

  • Reduced BP after exposure to a known allergen for that patient

Anaphylaxis

• Simply defined…

  • A serious allergic reaction that is rapid in onset and might cause death

• Symptoms typically occur within minutes to 2 hours

• Lifetime prevalence from all triggers 0.05% - 2%

• Rate appears to be increasing, especially in young people


Anaphylaxis

- Primary trigger in children is Food Allergy
  - 2/3rds of cases prompting ED visit triggered by FA

- Most common food triggers
  - Peanut, tree nuts, shellfish, fish, milk, egg and sesame
    - In other countries – chestnut, rice, buckwheat, chickpea predominate

- Any food can trigger reaction however
  - Recently associated with quinoa, dragon fruit
  - Carbohydrate antigens in mammalian meat

- Other triggers – medications, venom hypersensitivity, exercise, latex, immunotherapy
Anaphylaxis

- **Biphasic Reaction**
  - Up to 20% of anaphylactic reactions
  - Onset of 2nd phase ranges from 1 hr to 78hrs
    - Majority within 8 hours
  - Severity of 2nd phase is not predicted by severity of initial phase
- May be fatal
- Risk factors:
  - Oral administration of antigen
  - Beta blocker
  - Delay in onset of symptoms (>30 minutes)
  - Presence of hypotension or laryngeal edema during initial event
Anaphylaxis

• Fatalities associated with…
  • Adolescence
    • Some evidence to show concern for higher risk in infancy due to under recognition and no epinephrine autoinjector dose
  • Delay in administration of EpiPen
  • Asthma
    • Especially if poorly controlled
  • Peanut/Tree nut allergy
# Fatal Cases of Food Induced Anaphylaxis

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Food</th>
<th>Asthma</th>
<th>Prior History</th>
<th>Onset of symptoms</th>
<th>Location</th>
<th>Time of Epi</th>
<th>Time of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>M</td>
<td>Peanut</td>
<td>Yes</td>
<td>Yes</td>
<td>10 min</td>
<td>School</td>
<td>125 min</td>
<td>180 min</td>
</tr>
<tr>
<td>14</td>
<td>F</td>
<td>Peanut</td>
<td>Yes</td>
<td>Yes</td>
<td>20 min</td>
<td>School</td>
<td>65 min</td>
<td>95 min</td>
</tr>
<tr>
<td>15</td>
<td>F</td>
<td>Cashew</td>
<td>Yes</td>
<td>Yes</td>
<td>20 min</td>
<td>School</td>
<td>150 min</td>
<td>300 min</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>Egg</td>
<td>Yes</td>
<td>Yes</td>
<td>30 min</td>
<td>Fair</td>
<td>35 min</td>
<td>105 min</td>
</tr>
<tr>
<td>14</td>
<td>F</td>
<td>Cashew</td>
<td>Yes</td>
<td>Yes</td>
<td>30 min</td>
<td>School</td>
<td>35,100 min</td>
<td>240 min</td>
</tr>
<tr>
<td>16</td>
<td>F</td>
<td>Peanut</td>
<td>Yes</td>
<td>Yes</td>
<td>3 min</td>
<td>Home</td>
<td>20 min</td>
<td>120 min</td>
</tr>
</tbody>
</table>

## Near Fatal Cases of Food Induced Anaphylaxis

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Food</th>
<th>Asthma</th>
<th>Prior History</th>
<th>Onset of symptoms</th>
<th>Location</th>
<th>Time of Epi dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>F</td>
<td>Hazelnut</td>
<td>Yes</td>
<td>Yes</td>
<td>5 min</td>
<td>Friend’s home</td>
<td>25 min</td>
</tr>
<tr>
<td>17</td>
<td>F</td>
<td>Walnut</td>
<td>Yes</td>
<td>Yes</td>
<td>2 min</td>
<td>Friend’s home</td>
<td>130 min</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>Cow’s Milk</td>
<td>Yes</td>
<td>Yes</td>
<td>5 min</td>
<td>Vacation home</td>
<td>30 min</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>Hazelnut</td>
<td>Yes</td>
<td>Yes</td>
<td>1 min</td>
<td>Relative’s home</td>
<td>15 min</td>
</tr>
<tr>
<td>12</td>
<td>F</td>
<td>Brazil Nut</td>
<td>Yes</td>
<td>Yes</td>
<td>3 min</td>
<td>Home</td>
<td>10 min</td>
</tr>
<tr>
<td>12</td>
<td>F</td>
<td>Cow’s Milk</td>
<td>Yes</td>
<td>Yes</td>
<td>2 min</td>
<td>Home</td>
<td>15 min</td>
</tr>
<tr>
<td>13</td>
<td>M</td>
<td>Peanut</td>
<td>Yes</td>
<td>Yes</td>
<td>5 min</td>
<td>Relative’s home</td>
<td>30 min</td>
</tr>
</tbody>
</table>

### Fatal Cases of Food Induced Anaphylaxis

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Food</th>
<th>Asthma</th>
<th>Prior History</th>
<th>Food</th>
<th>Location</th>
<th>Epi</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>M</td>
<td>Brazil Nut</td>
<td>No</td>
<td>No</td>
<td>Mixed Nuts</td>
<td>Home</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>F</td>
<td>Peanut</td>
<td>Yes</td>
<td>Yes</td>
<td>Cake</td>
<td>Friend’s home</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>M</td>
<td>Pecan</td>
<td>Yes</td>
<td>Yes</td>
<td>Dip</td>
<td>Country Club</td>
<td>Unknown</td>
</tr>
<tr>
<td>14</td>
<td>F</td>
<td>Peanut</td>
<td>Yes</td>
<td>Yes</td>
<td>Egg Roll</td>
<td>Restaurant</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>F</td>
<td>Walnut</td>
<td>Yes</td>
<td>Yes</td>
<td>Candy</td>
<td>School</td>
<td>Late</td>
</tr>
<tr>
<td>17</td>
<td>F</td>
<td>Peanut</td>
<td>Yes</td>
<td>Yes</td>
<td>Snack Mix</td>
<td>Video Store</td>
<td>No</td>
</tr>
<tr>
<td>20</td>
<td>M</td>
<td>Walnut</td>
<td>Yes</td>
<td>Yes</td>
<td>Veggie Burger</td>
<td>Friend’s home</td>
<td>Late</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>Milk</td>
<td>Unknown</td>
<td>Yes</td>
<td>Milk</td>
<td>Daycare</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Recognizing Anaphylaxis

- Unanticipated, can progress rapidly
- Rapid recognition and treatment is essential

Krugeman et al 2006 - Survey of 1130 pediatricians given a clinical scenario of a child having an anaphylactic reaction

- Case scenario: A mother brings her 2 year old son to your office without an appointment. She states that he had a peanut butter and jelly sandwich approximately 30 minutes ago and within 10 minutes he started crying and pulling at his mouth. He has some wheezing and his lips are mildly swollen. He does not have hives and is not in respiratory distress. His vital signs are all normal.
<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>He is probably experiencing the oral allergy syndrome</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>He is probably experiencing anaphylaxis</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>He might be experiencing anaphylaxis, but the absence of hives makes this unlikely</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>I would observe him closely but not administer any medications</td>
<td>2%</td>
<td>98%</td>
</tr>
<tr>
<td>I would administer diphenhydramine</td>
<td>95%</td>
<td>5%</td>
</tr>
<tr>
<td>I would administer epinephrine</td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>After the symptoms resolve and the child has been observed for 30 minutes, I would discharge him home</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>I would suggest an oral antihistamine as needed for home use</td>
<td>89%</td>
<td>11%</td>
</tr>
<tr>
<td>I would prescribe a daily non sedating antihistamine to decrease the chance of a severe allergic reaction in the future</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>I would not prescribe epinephrine because his symptoms were mild and this was his first occurrence</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>I would recommend further testing/referral to be done (either by myself or an allergist)</td>
<td>86%</td>
<td>14%</td>
</tr>
</tbody>
</table>
Recognizing Anaphylaxis

• Results suggest pediatricians are only partially equipped to both recognize and treat anaphylaxis

• 70% agreed scenario was c/w anaphylaxis
• 20% agreed lack of hives made anaphylaxis unlikely

• 72% administered epinephrine
  • More likely to treat with epinephrine if out of residency >10 years
• 56% both recognized scenario was c/w anaphylaxis and treated with epinephrine

• 70% did not recognize that a 30 minute observation window was too short
Treating Anaphylaxis

- **An allergist approach:**
  - IM Epinephrine
  - Benadryl
  - Prednisone
  - H2 blocker
  - Albuterol
  - Monitoring for biphasic reaction
  - Prescription for EpiPen
  - Training regarding proper administration and indications for use of EpiPen
Management of Anaphylaxis

- Epinephrine 1:1000 (1mg/mL)
  - Intramuscular injection (thigh)
  - 0.2 - 0.5mg (adults)
  - 0.01mg/kg (children)

- Antihistamines
  - Benadryl
    - 25 – 50mg in adults
    - 1 mg/kg in children
  - H2 blocker

- Oxygen
- IVFs
- Albuterol
- Corticosteroids

Sampson, H. A. Pediatrics 2003;111:1601-1608
Management of Anaphylaxis - Outpatient

• Injectable epinephrine
  • <10kg – epinephrine (1:1000) 0.01mg/kg/dose with syringe
  • 10-20kg – EpiPen Jr (0.15mg epinephrine)
  • 20-28kg – EpiPen Jr or EpiPen
  • >28kg – EpiPen (0.3mg epinephrine)
  • Repeat in 5-10 minutes if needed

• Oral liquid diphenhydramine
  • Most readily absorbed
  • 1-1.5mg/kg up to 75mg

• Albuterol

• Transport to emergency facility
Management of Anaphylaxis - Inpatient

• Acute management:
  • Supplemental oxygen & airway management
  • IM Epinephrine
    • IV drip for severe hypotension (1:10,000)
  • IV Fluid expansion
  • H1 antagonist (diphenhydramine) – oral, IM or IV
  • Corticosteroids
    • Oral prednisone (2mg/kg up to 60mg)
    • IV solumedrol (2mg/kg up to 125mg)
  • Nebulized albuterol – every 20 minutes or continuous
  • H2 antagonist (ranitidine 1-2 mg/kg up to 150mg)
  • Glucagon for refractory hypotension 5-15 mcg/min

• Discharge therapy:
  • antihistamine (certirizine/fexofenadone/loratidine) x 3 days
  • Prednisone 1mg/kg (up to 75mg) x 3 days
Management of Anaphylaxis

- Epinephrine is the most important medication

- Delay in administration of epinephrine is strongly associated with fatalities from anaphylaxis

- Mechanism of epinephrine – bronchodilation, vasoconstriction, vasodilation of coronary vessels,

- High dose epinephrine and prolonged resuscitation are more successful in anaphylaxis than other causes of arrest
EpiPen

- Under prescribed by physicians
- Families frequently do not carry at all times
  - 71% had with them in office during allergy consultation

- Only 32% of patients/families could correctly demonstrate how to use an EpiPen

- Only 25% of physicians (ED, family medicine, pediatricians) could properly demonstrate use of an EpiPen


Grouhi M J Allergy Clin Immunol 1999;103:190-3
EpiPen Training

1. Grasp unit with the orange tip pointing downward.
2. Form fist around the unit (orange tip down).
3. With your other hand, pull off the blue safety release.
EpiPen Training

4. Hold orange tip near outer thigh.

DO NOT INJECT INTO BUTTOCK.
5. Swing and **firmly push** against outer thigh until it clicks so that unit is perpendicular (at 90° angle) to the thigh.

*(Auto-injector is designed to work through clothing.)*
EpiPen Training

6. Hold **firmly against thigh** for approximately 10 seconds to deliver drug. (The injection is now complete. The window on auto-injector will be obscured.)

7. Remove unit from thigh (the orange needle cover will extend to cover needle) and massage injection area for 10 seconds.

8. Call 911 and seek immediate medical attention.
Food Allergy in the School Setting

• The incidence of FA in children is increasing

• FA is present in 1 in 25 school age children
  J Allergy Clin Immunol 2009;124:175-82

• Management is avoidance

• Fatalities do occur in schools
  • Delay in epinephrine is a large contributing factor to this
Food Allergy in the School Setting

- Educate, Educate, Educate
- EpiPen training for teachers, lunch room workers, school nurse, child
- Educate child and staff on avoidance
- Educate staff on recognition of anaphylaxis
- Food Allergy Action Plan
Food Allergy Action Plan

Food Allergy Action Plan
Emergency Care Plan

Name: _____________________________ D.O.B.: __/__/____

Place Picture Here

Asthma: □ Yes (higher risk for a severe reaction) □ No

Weight: ______ lbs. 

Extremely reactive to the following foods:

THEREFORE:
□ If checked, give epinephrine immediately for ANY symptoms if the allergen was likely eaten.
□ If checked, give epinephrine immediately, even if no symptoms are noted

Any SEVERE SYMPTOMS after suspected or known ingestion:

One or more of the following:
- LUNG: Shortness of breath, wheezing, repetitive coughing
- HEART: Pale, blue, faint, weak pulse, dizzy, confusion
- THROAT: Tightness, hoarse, trouble breathing/swallowing
- MOUTH: Obstructive swelling (tongue and/or lips)
- SKIN: Hives, itchy rash, swelling (e.g., eyes, lips)

Or combination of symptoms from different body areas:
- SKIN: Hives, itchy rash, swelling (e.g., eyes, lips)
- GUT: Vomiting, diarrhea, crampy pain

MILD SYMPTOMS ONLY:

MOUTH: Itchy mouth
SKIN: A few hives around mouth/face, mild itch
GUT: Mild nausea/discomfort

1. INJECT EPINEPHRINE IMMEDIATELY
1. GIVE ANTIHISTAMINE
2. Call 911
2. Stay with student; alert healthcare professionals and parent
3. Begin monitoring (see box below)
3. If symptoms progress (see above), USE EPINEPHRINE
4. Give additional medications:
   - Antihistamine
   - Inhaler (bronchodilator) if asthma
   *Antihistamines & inhalers/bronchodilators are not to be depended upon to treat a severe reaction (anaphylaxis). USE EPINEPHRINE.

Adrenaclick™ 0.3 mg and Adrenaclick™ 0.15 mg Directions

Remove GREY caps labeled “1” and “2.” 
Place RED rounded tip against outer thigh, press down hard until needle penetrates. Hold for 10 seconds, then remove.

EPIPEN Auto-Injector and EPIPEN Jr Auto-Injector Directions

First, remove the EPIPEN Auto-Injector from the plastic carrying case.
Pull off the blue safety release cap
Hold orange tip near outer thigh (always apply to thigh)
Swing and firmly push orange tip against outer thigh.

A food allergy response kit should contain at least two doses of epinephrine, other medications as noted by the student’s physician, and a copy of this Food Allergy Action Plan.

A kit must accompany the student if he/she is off school grounds (i.e., field trip).

Contacts
Call 911 (Rescue squad: _______ _______ _______)
Doctor: _______ _______ _______ _______ Phone: _______ _______ _______ _______
Parent/Guardian: _______ _______ _______ _______ Phone: _______ _______ _______ _______
Other Emergency Contacts
Name/Relationship: _______ _______ _______ _______ Phone: _______ _______ _______ _______
Name/Relationship: _______ _______ _______ _______ Phone: _______ _______ _______ _______

Food Allergy and Anaphylaxis Network www.foodallergy.org
Peanut Allergy

- Legume family
  - Major allergic proteins are Ara h 1, 2, and 3; IgE antibody is directed at these proteins
  - Other legumes contain similar proteins

- Prevalence is increasing, estimated to have doubled in the past decade
  - Population based study in UK
  - Prevalence of peanut allergy increased from 0.5% to 1% from 1989 to 1995

- 25-35% of persons with peanut allergy will have allergy to tree nuts

Diagnosis of Peanut Allergy

- Positive, clear cut, history AND evidence of peanut specific IgE
  - via RAST or skin prick test
  - No oral challenge needed
- RAST can be diagnostic alone
  - Peanut specific serum IgE level of > 15kU/L has >95% chance of allergic reaction
- Conflicting history and borderline evidence of IgE antibodies – controlled oral food challenge
Natural Course of Peanut Allergy

• Develops at a median age of 14 months
• Originally thought to be life long allergy
  • More recent studies indicate 20% of children outgrow peanut allergy
• Prudent to reevaluate patients with peanut allergy
• SPT from positive to negative and/or decreasing RAST indicates resolution of allergy
• Only definitive way to prove resolution of peanut allergy is controlled oral food challenge
Management of Peanut Allergy

- AVOID the peanut
- Teach families to recognize symptoms of anaphylaxis & provide a written action plan for accidental ingestion
  - Read food labels, avoid high risk situations
- Estimated accidental ingestion occurs every 3-5 years
- Educational materials through Food Allergy and Anaphylaxis Network – [www.foodallergy.org](http://www.foodallergy.org)
Experimental Therapies for Peanut Allergy

• Oral immunotherapy
  • Ingesting small amounts of peanut flour regularly
    • Escalation phase, home daily dosing, dose escalation every 2 weeks, maintenance dose (4000mg – 16 peanuts), oral challenge
  • Also for egg, cow’s milk

• Monthly injections of humanized recombinant anti-IgE antibodies
  • Reduce levels of IgE bound to mast cells and basophils in order to prevent the activation of allergic response, at least to small amounts of antigen

• Food Allergy Herbal Formula 2
  • Works well in mice
  • Protects from anaphylaxis

Burks J Allergy Clin Immunol 2011;127:654-60
Song. J Allergy Clin Immunol 2010;23+:1208-17
Objectives

• Define the allergic response
• Discuss oral tolerance in the mucosal immune system
• Provide an overview of specific food hypersensitivities
  • PFAS, EE, EGID, Eczema, Anaphylaxis
• Recognize and manage anaphylaxis
• Understand how to use an EpiPen
• Discuss Key Features of Peanut Allergy
Questions...