Finding a Path to Safety in Food Allergy

Highlights of the Consensus Report
Knowledge gaps in several areas:

- **Prevalence**: what is the prevalence of food allergy and is it rising?
- **Diagnosis**: is there a best test for diagnosis?
- **Prevention**: what are the risk factors for food allergies?
- **Management**: what is the role of healthcare providers? Food industry? Individuals? Others?
Sponsors

Federal Sponsors
Food and Drug Administration
Food and Nutrition Service of the USDA
National Institute of Allergy and Infectious Diseases

Nonfederal Sponsors
Asthma and Allergy Foundation of America
Egg Nutrition Center
Food Allergy Research & Education
International Life Sciences Institute North America
Int’l Tree Nut Council Nutrition Research & Education Foundation
National Dairy Council
National Peanut Board
Seafood Industry Research Fund
The National Academies Study Process

- Study Defined
- Committee Selection and Approval
- Committee Meetings, Information Gathering, Deliberations, and Drafting Report
- Report Review and Approval
- Communication Strategy
- Report Released
- Communication
Statement of Task

The committee will examine critical issues related to food allergy and

• bring together leading investigators from relevant fields, clinicians, and parents; and to develop a framework for future work; and

• recommend actions to be implemented by both government and non-government agencies
Critical food allergy issues to address:

• Prevalence
• Diagnosis and prognosis
• Early determinants
• Create safe environments for people with food allergy
• Research gaps
What is a Food Allergy?

Adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food

- IgE-mediated food allergy is the focus of this report
- Common IgE-mediated reaction characteristics
  - Immediate to 2 hour onset of reaction
  - Small amount of food allergen required for reaction
  - Typical symptoms: urticaria, angioedema, vomiting, diarrhea, oral itching, anaphylaxis
Actions

- Obtain accurate prevalence estimates
- Use proper diagnostic methods and provide evidence-based health care
- Identify prevention approaches
- Expand research*
- Improve education and training
- Implement improved policies and related practices

Actors

- Research
- Government
- Health Care Providers
- Industry
- Public Health Authorities
- Professional Organizations
- Educational Institutions

Outcomes

**Short-term**
- Decrease the number of severe reactions due to food allergies
- Improve health and quality of life for individuals with food allergy
- Increase awareness and dispel misconceptions about food allergies among all stakeholders

**Long-term**
- Develop safe, effective therapies
- Prevent onset of food allergies
PREVALENCE
Figure 4. Average number of hospital discharges per year among children under age 18 years with any diagnosis related to food allergy: United States, 1998–2006

<table>
<thead>
<tr>
<th>Years</th>
<th>Average number of discharges per year</th>
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<tbody>
<tr>
<td>1998–2000</td>
<td>2,615</td>
</tr>
<tr>
<td>2001–2003</td>
<td>4,135</td>
</tr>
<tr>
<td>2004–2006</td>
<td>19,537†</td>
</tr>
</tbody>
</table>

†Statistically significant trend.

SOURCE: CDC/NCHS, National Health Interview Survey.
The committee recommends that

• The Centers for Disease Control and Prevention obtain prevalence estimates on food allergy in a systematic and statistically sound manner in:
  
  o a sufficiently large population
  o both children and adults
  o groups defined by race, ethnicity, and socio-economic status to determine differences in diagnosis and prevalence within these groups
The committee recommends that

- physicians use evidence-based, standardized procedures as the basis for food allergy diagnosis and avoid non-standardized and unproven procedures

- when food allergy is suspected, a patient should be evaluated by a physician who has the training and experience to select and interpret appropriate diagnostic tests
PREVENTION
Prenatal
- Genetic factors
- Family history of allergy
- Fetal epigenetic modification through maternal exposure
- Parents’ country of birth
- Maternal diet during pregnancy
- Maternal folate level

Perinatal
- Gut microbiota
- Route of delivery
- Antibiotic Use
- Animal exposure

Postnatal
- Maternal diet during lactation
- Duration of breastfeeding
- Cutaneous exposure to food allergens
- Introduction of allergenic foods
- Age at first introduction of solids
- Vitamin D
The committee recommends that

• public health authorities and clinical practice guidelines include consistent, clear, and evidence-based advice for families and health care providers including dietitians, about the potential benefits of introducing allergenic foods in the first year of life
EDUCATION AND TRAINING
FOR PUBLIC HEALTH AUTHORITIES, HEALTH CARE PROVIDERS, AND PATIENTS AND CAREGIVERS

The committee recommends that

- the Centers for Disease Control and Prevention work with other public health authorities to plan and initiate a public health campaign to increase awareness and empathy as well as to dispel misconceptions about food allergy
The committee recommends that

- public health authorities regularly update guidelines on diagnosis, prevention, and management of food allergy based on strong scientific evidence, as emerging scientific data become available
FOR PUBLIC HEALTH AUTHORITIES, HEALTH CARE PROVIDERS, AND PATIENTS AND CAREGIVERS

The committee recommends that

- health care providers counsel patients and their caregivers on food allergy following the most recent food allergy guidelines and emphasizing the need to take age-appropriate responsibility for managing their food allergy
- counseling is particularly important for those at high risk of food allergy and severe food allergy reactions, such as adolescents, young adults, and those with both food allergy and asthma
The committee recommends that

- health care providers and others use intramuscular epinephrine (adrenaline) in all infants, children, and adults as a first line of emergency management for episodes of food allergy anaphylaxis.
- The Food and Drug Administration evaluate the need for, and, if indicated, industry should develop an auto-injector with 0.075 mg epinephrine specifically designed for use in infants.
FOR PUBLIC HEALTH AUTHORITIES, HEALTH CARE PROVIDERS, AND THEIR PATIENTS AND CAREGIVERS

The committee recommends that

• medical schools as well as residency and fellowship programs and other relevant schools include training for health care providers on:
  
  o management of food allergy and anaphylaxis
  o approaches to counseling patients and their caregivers
The committee recommends that:

- organizations, such as the American Red Cross or the National Safety Council, that provide emergency training to the general public and to first responders and first aid personnel in various professions and workplaces, include food allergy and anaphylaxis management in their curricula.
The committee recommends that

• food industry leaders provide the necessary resources for integrating food allergy training into existing general food safety and customer service training for employees at all levels and stages in the food industry
IMPROVE POLICIES AND PREVENTION OF SEvere REACTIONS
The committee recommends that

- the Codex Alimentarius Commission and public health authorities in individual countries decide on a periodic basis about which allergenic foods should be included in their priority lists based on scientific and clinical evidence of regional prevalence and severity of food allergies as well as allergen potency
The committee recommends that:

• the Food and Drug Administration makes its decisions about labeling exemptions for ingredients derived from priority allergenic sources based on a quantitative risk assessment framework
POLICIES REGARDING LABELING OF PACKAGED FOODS

• ...the food manufacturing industry, the Food and Drug Administration (FDA), and the U.S. Department of Agriculture (USDA) work cooperatively to replace the Precautionary Allergen Labeling system for low-level allergen contaminants with a new risk-based labeling approach, such as the VITAL program used in Australia and New Zealand
POLICIES AT SPECIFIC SETTINGS

• ...all state, local, and tribal governmental agencies adopt the 2013 Food and Drug Administration Food Code, which includes provisions for food establishments on preventing food allergy reactions
POLICIES AT SPECIFIC SETTINGS (E.G. SCHOOLS, EARLY CARE AND EDUCATION FACILITIES AND AIRLINES)

The committee recommends that

- relevant federal agencies convene a special task force to establish and implement policy guidelines to:
  - assure emergency epinephrine capabilities are in place in public venues
  - provide standardized food allergy and anaphylaxis first aid training to appropriate staff
  - implement education standards for responding to and managing food allergy emergencies
The committee recommends that

- the FDA continue to work together with other relevant federal, state, and local agencies to develop and implement labeling policies specific to allergenic ingredients in packaged and prepared foods that are distributed through airlines and other public venues, including schools and early care and education facilities.
RESEARCH PRIORITIES
The Committee

- **Virginia A. Stallings** (Chair), The Children’s Hospital of Philadelphia
- **Katie Allen**, Murdoch Childrens’ Research Inst, Australia
- **A. Wesley Burks**, University of North Carolina
- **Nancy Cook**, Harvard University
- **Sharon Donovan**, University of Illinois
- **Stephen J. Galli**, Stanford University
- **Bernard Guyer**, Johns Hopkins University
- **Gideon Lack**, King College, London, U.K.
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- **Hugh A. Sampson**, Icahn School of Medicine at Mount Sinai
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• Ann L. Yaktine, Director, Food and Nutrition Board
• Kimber Bogard, Director, Board on Children, Youth, and Families (through July 2015)
• Natacha Blain, Director, Board on Children, Youth, and Families (from November 2015)
Download the report and other materials at [www.nationalacademies.org/FoodAllergies](http://www.nationalacademies.org/FoodAllergies)

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Prevalence in Different Countries

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<thead>
<tr>
<th>Country (year) age</th>
<th>Food Allergy Prevalence (%)</th>
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<tbody>
<tr>
<td>Thailand (2010) 3-7 y</td>
<td>1.1</td>
</tr>
<tr>
<td>Iceland (2001-2014) 1 Y</td>
<td>1.9</td>
</tr>
<tr>
<td>Denmark (2003-2004) 2 Y</td>
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<tr>
<td>South Africa (2003-2004) 1-3 Y</td>
<td>2.5</td>
</tr>
<tr>
<td>Isle of Wight (2004-2005) 2 Y</td>
<td>2.5</td>
</tr>
<tr>
<td>China (1999) 0-2 Y</td>
<td>3.0</td>
</tr>
<tr>
<td>Denmark (2000-2001) 1.5 Y</td>
<td>3.5</td>
</tr>
<tr>
<td>China (2009) 0-1 Y</td>
<td>3.5</td>
</tr>
<tr>
<td>Isle of Wight (2002-2003) 1 Y</td>
<td>3.8</td>
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<td>USA (1980-1984) 0-3 Y</td>
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<td>Norway (unknown) 2 Y</td>
<td>4.4</td>
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<tr>
<td>Australia (2008-2011) 1 Y</td>
<td>6.8</td>
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<tr>
<td>China (2009) 0-2 Y</td>
<td>7.7</td>
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