World Allergy Week 2014

ANAPHYLAXIS
When allergies can be severe and fatal

Are you ready for anaphylaxis?
Welcome to World Allergy Week 2014

Lanny Rosenwasser, MD
President, World Allergy Organization

The World Allergy Organization welcomes all of you to join us and all of the educators, healthcare practitioners, policymakers, parents, patients, advocates and medical professionals around the world to mark the fourth consecutive year of World Allergy Week by organizing and participating in activities that bring attention to the rising global prevalence of anaphylaxis.

Motohiro Ebisawa, MD, PhD
Chair, Communications Committee

In keeping with the World Allergy Week tradition of bringing attention to a specific allergic disease each year, the World Allergy Organization has selected Anaphylaxis – When Allergies Can Be Severe and Fatal, emphasizing the great need for increased awareness, training, and resources that lead to improved safety and quality of life.
**World Allergy Week 2014 Chairpersons**

Motohiro Ebisawa, MD and Paul Greenberger, MD

**WAO Communications Committee 2014-2015**

<table>
<thead>
<tr>
<th>Chair</th>
<th>Co-Chair</th>
<th>WAO Communications Committee 2014-2015</th>
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<tr>
<td>Motohiro Ebisawa (Japan)</td>
<td>Paul Greenberger (United States)</td>
<td>Dilsad Mungan (Turkey)</td>
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<td>Mona Al Ahmad (Kuwait)</td>
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<td>Ruby Pawankar (Japan)</td>
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<td>Paolo Barrera Perigault (Panama)</td>
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<td>Harald Renz (Germany)</td>
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<td>Suwat Benjaponpitak (Thailand)</td>
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<td>Noel Rodriguez (Mexico)</td>
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<td>Menachem Rottem (Israel)</td>
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<td>Glenis Scadding (United Kingdom)</td>
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<td>Carla Irani (Lebanon)</td>
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<td>Mimi Tang (Australia)</td>
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<td>Amir Hamzah Latiff (Malaysia)</td>
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<td>Stephen Tilles (United States)</td>
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<td>Hae-Ran Lee (Korea)</td>
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<td>Richard Weber (United States)</td>
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Anaphylaxis is a hypersensitivity reaction to foreign substances such as foods, medications, and insect bites or stings. Anaphylaxis is a serious, life-threatening generalized or systemic hypersensitivity reaction and a serious allergic reaction that is rapid in onset and can be fatal. Symptoms may be throat swelling, itchy rash, and low blood pressure.

Are you prepared for anaphylaxis?
Anaphylaxis is a global public health concern. The rate of anaphylaxis occurrence seems to be increasing with geographic variations.

- Data on the prevalence of anaphylaxis in the general population is limited.
- However, the recent survey in the United States indicates that the prevalence of anaphylaxis in the general population is at least 1.6% and probably higher.\(^1\)
- In contrast, a European study indicated that an estimated 0.3% (95% CI 0.1-0.5) of the population experience anaphylaxis at some point of time in their lives.\(^2\)

The **WAO Anaphylaxis Guidelines** published by the World Allergy Organization in 2011 should be disseminated to physicians throughout the world to prevent tragedies by anaphylaxis death.\(^3\)

The **WAO White Book on Allergy: Update 2013**, which addresses this issue for the public, patients and policy makers, should also be disseminated worldwide as an important educational and advocacy document.\(^4\)

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Causes of anaphylaxis

- The relative importance of specific anaphylaxis triggers in different age groups appears to be universal.
- Foods are the most common trigger in children, teens and young adults.
- Insect stings and medications are relatively common triggers in middle-aged and elderly adults.

When anaphylaxis can become worse or fatal

Potential associated factors that can cause more severe forms and fatal allergies include:

- age
- physiologic state (such as pregnancy)
- concomitant diseases
  - poorly controlled asthma
  - cardiovascular disease
- concurrent use of medications
  - Beta-adrenergic blockers
  - ACE inhibitors
- amplifying co-factors
  - Exercise
  - non-steroidal anti-inflammatory drugs
  - Infections
  - emotional stress
  - peri-menstrual status
Anaphylaxis mechanisms and triggers

Figure 2, From the “WAO Guidelines for the Assessment & Management of Anaphylaxis”

http://www.waojournal.org/content/4/2/13

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Warning: The WAO Guidelines are intended for physician use only. All others, please contact your physician regarding preparation, treatment, and prevention of anaphylaxis.
Patient factors that contribute to anaphylaxis

**Figure 1, From the “WAO Guidelines for the Assessment & Management of Anaphylaxis”**

http://www.waojournal.org/content/4/2/13

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## Symptoms and signs of anaphylaxis

### Table 2, From the “WAO Guidelines for the Assessment & Management of Anaphylaxis”


http://www.waojournal.org/content/4/2/13

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<table>
<thead>
<tr>
<th>Skin, subcutaneous tissue, and mucosa</th>
<th>Flushing, itching, urticaria (hives), angioedema, morbilliform rash, pilor erection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Periorbital itching, erythema and edema, conjunctival erythema, tearing</td>
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<td></td>
<td>Itching of lips, tongue, palate, and external auditory canals; and swelling of lips, tongue, and uvula</td>
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<tr>
<td><strong>Respiratory</strong></td>
<td>Nasal itching, congestion, rhinorrhea, sneezing</td>
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<td></td>
<td>Throat itching and tightness, dysphonia, hoarseness, stridor, dry staccato cough</td>
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<td></td>
<td>Lower airways: increased respiratory rate, shortness of breath, chest tightness, deep cough, wheezing/bronchospasm, decreased peak expiratory flow</td>
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<tr>
<td></td>
<td>Cyanosis</td>
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<td></td>
<td>Respiratory arrest</td>
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<tr>
<td><strong>Gastrointestinal</strong></td>
<td>Abdominal pain, nausea, vomiting (stringy mucus), diarrhea, dysphagia</td>
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<tr>
<td><strong>Cardiovascular system</strong></td>
<td>Chest pain</td>
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<td></td>
<td>Tachycardia, bradycardia (less common), other arrhythmias, palpitations</td>
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<td></td>
<td>Hypotension, feeling faint, urinary or fecal incontinence, shock</td>
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<td></td>
<td>Cardiac arrest</td>
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<td><strong>Central nervous system</strong></td>
<td>Aura of impending doom, uneasiness (in infants and children, sudden behavioral change, eg. irritability, cessation of play, clinging to parent); throbbing headache (pre-epinephrine), altered mental status, dizziness, confusion, tunnel vision</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Metallic taste in the mouth</td>
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<td></td>
<td>Cramps and bleeding due to uterine contractions in females</td>
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</tbody>
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**Clinical criteria for the diagnosis of anaphylaxis**

<table>
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<tr>
<th>Anaphylaxis is highly likely when any one of the following three criteria is fulfilled:</th>
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<tbody>
<tr>
<td>1. Sudden onset of an illness (minutes to several hours), with involvement of the skin, mucosal tissue, or both (e.g., generalized hives, itching or flushing, swollen lips-tongue-uvula)</td>
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<tr>
<td>AND AT LEAST ONE OF THE FOLLOWING:</td>
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<tr>
<td>Sudden respiratory symptoms and signs (e.g., shortness of breath, wheeze, cough, stridor, hypoxemia)</td>
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<tr>
<td>Sudden reduced BP or symptoms of end-organ dysfunction (e.g., hypotonia [collapse], incontinence)</td>
</tr>
<tr>
<td>OR 2. Two or more of the following that occur suddenly after exposure to a likely allergen or other trigger* for that patient (minutes to several hours):</td>
</tr>
<tr>
<td>Sudden skin or mucosal symptoms and signs (e.g., generalized hives, itch, flush, swollen lips-tongue-uvula)</td>
</tr>
<tr>
<td>Sudden respiratory symptoms and signs (e.g., shortness of breath, wheeze, cough, stridor, hypoxemia)</td>
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<tr>
<td>Sudden reduced BP or symptoms of end-organ dysfunction (e.g., hypotonia [collapse], incontinence)</td>
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<tr>
<td>Sudden gastrointestinal symptoms (e.g., crampy abdominal pain, vomiting)</td>
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<tr>
<td>OR 3. Reduced blood pressure (BP) after exposure to a known allergen** for that patient (minutes to several hours):</td>
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<tr>
<td>Infants and children: low systolic BP (age-specific) or greater than 30% decrease in systolic BP***</td>
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<tr>
<td>Adults: systolic BP of less than 90 mm Hg or greater than 30% decrease from that person’s baseline</td>
</tr>
</tbody>
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* For example, immunologic but IgE-independent, or non-immunologic (direct mast cell activation) |

** For example, after an insect sting, reduced blood pressure might be the only manifestation of anaphylaxis; or, after allergen immunotherapy, generalized hives might be the only initial manifestation of anaphylaxis. |

*** Low systolic blood pressure for children is defined as less than 70 mm Hg from 1 month to 1 year, less than (70 mm Hg + [2 x age]) from 1 to 10 years, and less than 90 mm Hg from 11 to 17 years. Normal heart rate ranges from 80-140 beats/minute at age 1-2 years; from 80-120 beats/minute at age 3 years; and from 70-110 beats/minute after age 3 years. In infants and children, respiratory compromise is more likely than hypotension or shock, and shock is more likely to be manifest initially by tachycardia than by hypotension.

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**Figure 3, From the “WAO Guidelines for the Assessment & Management of Anaphylaxis”**

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Posters and laminated pocket cards available from WAO. Access the order form at:  
http://www.worldallergy.org/UserFiles/file/PocketCardPosterOrderForm.pdf
Preparing for anaphylaxis involves having a written emergency protocol and rehearsing it regularly.

Protocol:

1. Place the patient on the back (or in a position of comfort if there is respiratory distress and/or vomiting.
2. Elevate the lower extremities.
3. Administer adrenaline*
4. Assess circulation, airway, breathing, and mental status, skin, and other visual indicators.

Adrenaline
Intramuscularly administered-adrenaline (epinephrine) is life-saving for the treatment of anaphylaxis.

- It relieves the symptoms of anaphylaxis including preventing, and relieving, airway obstruction via Beta-2 adrenergic effects caused by mucosal edema and smooth muscle concentration.
- It prevents and relieves fall in blood pressure and shock.

Prevention:

It is important to advise patients about the need to have as-advised regular follow-up visits with a physician, preferably an allergy/immunology specialist, to:

- confirm their specific trigger(s) of anaphylaxis
- prevent recurrences by avoiding the specific trigger(s)
- have an emergency action plan and emergency medication on hand
- have support from the family members
- receive immunomodulation, where it is clinically approved and relevant

Immunomodulation
Immunomodulation is Immunotherapy with Hymenoptera venoms or fire ant extracts which are effective therapies to reduce the risk of anaphylaxis.
Basic management of anaphylaxis

1. Have a written emergency protocol for recognition and treatment of anaphylaxis and rehearse it regularly.

2. Remove exposure to the trigger if possible, e.g., discontinue an intravenous diagnostic or therapeutic agent that seems to be triggering symptoms.

3. Assess the patient’s circulation, airway, breathing, mental status, skin, and body weight (mass). Promptly and simultaneously, perform steps 4, 5 and 6.

4. Call for help: resuscitation team (hospital) or emergency medical services (community) if available.

5. Inject epinephrine (adrenaline) intramuscularly in the mid-anterior aspect of the thigh: 0.01 mg/kg of a 1:1,000 (1 mg/mL) solution, maximum of 0.5 mg (adult) or 0.3 mg (child); record the time of the dose and repeat it in 5-10 minutes, if needed. Most patients respond to 1 or 2 doses.

6. Place patient on the back or in a position of comfort if there is respiratory distress and/or vomiting; elevate the lower extremities; fatality can occur within seconds if patient stands or sits suddenly.

7. When indicated, give high-flow supplemental oxygen (9-6 L/min), by face mask or oropharyngeal airway.

8. Establish intravenous access using needles or catheters with wide-bore cannulae (14 - 16 gauge). When indicated, give 1-2 litres of 0.9% (isotonic) saline rapidly (e.g. 5-10 mL/kg in the first 5-10 minutes to an adult; 10 mL/kg to a child).

9. When indicated at any time, perform cardiopulmonary resuscitation with continuous chest compressions.

In addition,

10. At frequent, regular intervals, monitor patient’s blood pressure, cardiac rate and function, respiratory status, and oxygenation (monitor continuously, if possible).

Figure 4, From the “WAO Guidelines for the Assessment & Management of Anaphylaxis”

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Discharge management and prevention of future anaphylaxis recurrences in the community

Figure 5, From the “WAO Guidelines for the Assessment & Management of Anaphylaxis”

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Section 2.5. Anaphylaxis- Key Statements
Richard F. Lockey, Stephen F. Kemp, Philip L. Lieberman, Aziz Sheikh

- Epinephrine (adrenaline) at appropriate doses, injected intramuscularly into the mid-anterior lateral thigh, is the drug of choice to treat anaphylaxis.
- Anaphylaxis includes both allergic and non-allergic etiologies.
- The term “anaphylactoid” is outdated.
- The variability and severity of anaphylaxis is somewhat dependent on the route by which the allergen or inciting agent is delivered, e.g., parenteral versus oral administration; the former is commonly associated with more severe reactions.
To learn more about anaphylaxis

World Allergy Organization
Resources
http://www.worldallergy.org/anaphylaxis

www.worldallergyweek.org

Patient Advocacy:

Allergy and Anaphylaxis Australia
Fact Sheets, Allergen Specifics
School Resources

Anaphylaxis Campaign
Fact Sheets
http://www.anaphylaxis.org.uk/what-is-anaphylaxis/our-factsheets

Anaphylaxis Canada
Helpful Info
http://www.anaphylaxis.ca/en/resources/helpful_info.html

Anaphylaxis Ireland
Informational leaflets
http://www.anaphylaxisireland.ie/?page_id=124

Food Allergy Research & Education (FARE)
Resources
http://www.foodallergy.org/resources-for
About the World Allergy Organization

The World Allergy Organization is an international alliance of 95 regional and national allergy, asthma and immunology societies. Through collaboration with its Member Societies WAO provides a wide range of educational and outreach programs, symposia and lectureships to allergists/immunologists around the world and conducts initiatives related to clinical practice, service provision, and physical training in order to better understand and address the challenges facing allergists/immunologists worldwide.

www.worldallergy.org

Upcoming World Allergy Organization Meetings:

WISC 2014
Rio de Janeiro, Brazil
6-9 December 2014
Member Societies of the World Allergy Organization

ASIA AND PACIFIC

Allergy & Immunology Society of Sri Lanka
Allergy and Clinical Immunology Society (Singapore)
Allergy and Immunology Society of Thailand
Asia Pacific Association of Allergy, Asthma, and Clinical Immunology
Asia Pacific Association of Pediatric Allergy, Respirology and Immunology
Australasian Society of Clinical Immunology and Allergy
Azerbaijan Society for Asthma, Allergy and Clinical Immunology
Bangladesh Society of Allergy and Immunology
Chinese Society of Allergology
Hong Kong Institute of Allergy
Indian Academy of Allergy
Indian College of Allergy, Asthma and Clinical Immunology
Indonesian Society of Allergy and Immunology
Japanese Society of Allergology
Korean Academy of Asthma, Allergy and Clinical Immunology
Malaysian Society of Allergy and Immunology
Mongolian Society of Allergology
Taiwan Academy of Pediatric Allergy Asthma Immunology
Vietnam Association of Allergy, Asthma and Clinical Immunology

LATIN AMERICA

Argentine Association of Allergy and Immunology
Argentine Society of Allergy and Immunology
Brazilian Society of Allergy and Immunology
Chilean Society of Allergy and Immunology
Colombian Allergy, Asthma and Immunology Association
Cuban Society of Allergology
Ecuadorian Society of Allergy, Asthma, and Immunology
Guatemalan Allergy, Asthma, and Clinical Immunology Society
Honduran Society of Allergy and Clinical Immunology

AFRICA AND MIDDLE EAST

Allergy Society of Kenya
Allergy Society of South Africa
Egyptian Society of Allergy and Clinical Immunology
Egyptian Society of Pediatric Allergy and Immunology
Iranian Society of Asthma and Allergy
Israel Association of Allergy and Clinical Immunology
Jordanian Society for Allergy and Clinical Immunology
Kuwait Society of Allergy & Clinical Immunology
Lebanese Society of Allergy and Immunology
Moroccan Society of Allergology and Clinical Immunology
National Association for Private Algerian Allergists
Serbian Association of Allergologists and Clinical Immunologists
Tunisian Society of Respiratory Diseases and Allergology
Turkish National Society of Allergy and Clinical Immunology
Zimbabwe Allergy Society

Latin American Society of Allergy and Immunology
Mexican College of Allergy and Clinical Immunology (CMICA)
Mexican College of Pediatricians Specialized in Allergy and Clinical Immunology
Panamanian Association of Allergology and Clinical Immunology
Paraguayan Society of Allergy, Asthma, and Immunology
Peruvian Society of Allergy and Immunology
Philippine Society of Allergy, Asthma and Immunology
Uruguayan Society of Allergology
Venezuelan Society of Allergy, Asthma and Immunology

—continued
Member Societies of the World Allergy Organization

EUROPE
Albanian Society of Allergology and Clinical Immunology
Armenian Association of Immunology and Allergy
Austrian Society of Allergology and Immunology
Belarus Association of Allergology & Clinical Immunology
Belgian Society of Allergy and Clinical Immunology
British Society of Allergy and Clinical Immunology
Bulgarian National Society of Allergology
Commonwealth of Independent States Society of Allergology and Immunology
Croatian Society of Allergology and Clinical Immunology
Czech Society of Allergology and Clinical Immunology
Danish Society for Allergology
Dutch Society of Allergology
European Academy of Allergy and Clinical Immunology (EAACI)
Finnish Society of Allergology and Clinical Immunology
French Society of Allergology and Clinical Immunology
Georgian Association of Allergology and Clinical Immunology
German Society for Allergology and Clinical Immunology
Hellenic Society of Allergology and Clinical Immunology
Hungarian Society of Allergology and Clinical Immunology
Icelandic Society of Allergy and Clinical Immunology
Italian Association of Territorial and Hospital Allergists
Italian Society of Allergology and Clinical Immunology
Latvian Association of Allergists
Moldavian Society of Allergology & Immunology
Norwegian Society of Allergology and Immunopathology
Polish Society of Allergology
Portuguese Society of Allergology and Clinical Immunology
Romanian Society of Allergology and Clinical Immunology
Russian Association of Allergology and Clinical Immunology
Slovenian Association for Allergology & Clinical Immunology
Spanish Society of Allergology and Clinical Immunology
Swedish Association for Allergology
Swiss Society of Allergology and Immunology
Ukrainian Allergists Association
Ukrainian Association of Allergologists and Clinical Immunologists

AFFILIATE ORGANIZATIONS
British Society for Immunology
Global Allergy and Asthma European Network (GA2LEN)
International Association of Asthmology (INTERASMA)
International Primary Care Respiratory Group (IPCRG)
Southern European Allergy Societies (SEAS)

NORTH AMERICA
American Academy of Allergy, Asthma and Immunology
American College of Allergy, Asthma and Immunology
Canadian Society of Allergy and Clinical Immunology
How are you raising awareness of anaphylaxis?

Tell us about your activities for World Allergy Week 2014.

Email: info@worldallergy.org

Facebook: facebook.com/worldallergy.org

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