

## Position Statement

### The Use of Epinephrine in the Treatment of Anaphylaxis

November 2002

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*The statement below is not to be construed as dictating an exclusive course of action nor is it intended to replace the medical judgment of healthcare professionals. The unique circumstances of individual patients and environments are to be taken into account in any diagnosis and treatment plan. The above statement reflects clinical and scientific advances as of the date of publication and is subject to change.*

Epinephrine has long been regarded as the treatment of choice for acute anaphylaxis.<sup>1</sup> This is true despite the recognition of its potential hazards. Alternative treatments - such as antihistamines, sublingual isoproterenol, inhaled epinephrine, and corticosteroids without epinephrine - have failed to prevent or relieve severe anaphylactic reactions.<sup>2,3</sup> It is therefore inappropriate to use them for the first-line treatment or prevention of anaphylaxis.

However, the appropriate clinical use of epinephrine has been limited by misconceptions and by the reluctance of some patients and physicians to use this medication.<sup>4</sup> Some of these misconceptions include: (1) a severe attack will always be preceded by an earlier and milder warning reaction; (2) there is always time to get medical attention so patients do not have to worry about administering epinephrine so quickly; and (3) medications, especially epinephrine, will always work when needed, even if use is delayed by patients who wait and see whether they will really need it. In fact, milder warning attacks will not necessarily precede a fatal or near-fatal reaction.<sup>5</sup> It is also clear that some of these reactions progress so rapidly that there is not enough time to obtain medical attention.<sup>4-7</sup> Even when epinephrine is used promptly, it is not always effective in cases of severe anaphylactic shock.<sup>5,7-10</sup> Physicians often perceive epinephrine as dangerous because of its cardiovascular effects<sup>11</sup> and may withhold it as a treatment of last resort. Although intravenous infusion of epinephrine may be more dangerous, the standard subcutaneous dose of epinephrine, 1:1000, 0.3 ml, has far greater benefit than risk in the management of acute anaphylaxis. Frequent or higher doses of subcutaneous epinephrine should be avoided if possible; but repeated doses may be necessary for severe anaphylaxis, and simultaneous efforts to obtain emergency medical help should always be made when the initial dose is given. There is clear evidence that delays or failure in the use of epinephrine have both contributed to many fatal reactions to insect stings and foods.<sup>3-7</sup> These reports show that both sting and food reactions are more often fatal when they occur away from home. These reactions occurred in spite of the patient making reasonable efforts to avoid exposure, and fatal outcomes are most often associated with either not using or a delay in its use.

The estimated risk of anaphylaxis in the general population is 1% to 2% for insect stings and foods, with a lower prevalence for drugs and latex. The estimated incidence of death from insect stings in the United States is 40 to 50 per year; there are no clear data on deaths from other causes of anaphylaxis, but extrapolation of regional data suggests that the death rates for allergic reactions to foods and insect stings may be comparable.<sup>6,7</sup> Everyone at risk for anaphylaxis should be educated in the use of the available prescription epinephrine self-injection kits and avoidance precautions. Epinephrine must also be available in many first-aid situations for use by trained personnel who can evaluate on the scene the indication, benefit, and risk of treatment with epinephrine in individual cases. These efforts could significantly reduce the annual death rate associated with sting and food anaphylaxis.

The American Academy of Allergy, Asthma and Immunology; its Food, Drug and Anaphylaxis Interest Section; and its component Committees on Insects, Anaphylaxis, and Adverse Reactions to foods recognize the need to supplement previous position statements on the use of epinephrine. The National Institutes of Health Consensus Development Conference in 1978<sup>2</sup> remains the basis for existing guidelines, recognizing that:

1. Everyone is a potential victim of anaphylaxis.
2. The prevalence and frequency of anaphylaxis is greater than is generally believed.
3. Better education of lay and professional populations is essential and can prevent most deaths.
4. Increased availability of epinephrine is needed at the site of an emergency for use by all trained personnel.
5. Non prescription availability of epinephrine is dangerous.

The American Academy of Allergy, Asthma and Immunology, in a 1977 position statement, endorsed the administration of epinephrine by properly instructed lay persons and paramedical personnel as recommended by a physician to insect allergic patients in the event of severe allergic reactions. The American Academy of Pediatrics, in its 1990 Guidelines for Urgent Care in school, went further in addressing the need for designated personnel in the schools to be trained for emergency treatment, for legislation to be encouraged in every state to provide legal protection to Good Samaritan emergency care givers, and for anaphylaxis treatment kits to be made available as a routine part of an emergency first aid treatment kit.<sup>12</sup> More recent reports have addressed the need for the availability and proximity of the epinephrine kit because of the higher mortality rate when administration was delayed. Ideally, barring social and institutional constraints, the patient should have the kit on his or her person at all times.

The purpose of this position statement is to endorse and incorporate the above-outlined guidelines of the National Institutes of Health and the American Academy of Pediatrics into expanded guidelines for the use of epinephrine in the treatment of anaphylaxis. The goal is to increase awareness and availability of epinephrine for immediate use when and where it is needed to save lives. To this end, we make the following recommendations.

1. Physicians should ask patients about any previous food, drug, or sting reactions. If there is a history of anaphylaxis or serious reaction and the risk of another reaction is substantial in the judgment of the clinician, an epinephrine kit should be prescribed with clear instructions regarding its use. In such cases, there should be further discussion of the importance of referral for consultation with an appropriate expert (e.g., a board-certified allergist-immunologist) regarding long-term preventive management, including diagnostic identification and avoidance of relevant allergens. Similar determinations and guidance are imperative when the patient leaves the emergency room (or clinic or medical office) after treatment for anaphylaxis.<sup>13</sup> Efforts to educate physicians, emergency room staff, nurses, pharmacists, school boards, and state legislators about the needs of patients at risk for anaphylaxis must be undertaken on a larger scale.
2. The patient's own prescription epinephrine should be administered by any individual recognizing the presence of an emergency need. Legislation to provide Good Samaritan protection should be passed in the many states where it does not already exist. The American Medical Association has endorsed this effort and a model bill, which provides for the certification of individuals trained to provide epinephrine treatment when needed. Qualified lay personnel in positions of responsibility for public safety (e.g., lifeguards, park and forest rangers, scout leaders, paramedics, school and industrial nurses, teachers, camp counselors) should be educated in the appropriate use of epinephrine and should be authorized to administer epinephrine for suspected anaphylaxis in conjunction with arrangements for complete medical management of the reaction.
3. Recognition and treatment of anaphylaxis should be a routine part of cardiopulmonary resuscitation training and certification and of all paramedic training programs. The administration of epinephrine to a patient who does not have a prescription is dependent on the training and experience of the treating individual in evaluating the indication and potential risk of epinephrine in the situation at hand. As endorsed by the American Medical Association, individual states may legislate a certification procedure for the use of epinephrine by individuals not licensed by other professional boards. Such certification procedures would apply only to those in designated positions of public safety and should be under the supervision of a board-certified and licensed physician.
4. Epinephrine for injection should be included in all emergency medical treatment kits such as those in airline, bus, and rail carriers; schools; restaurants; and other public facilities. Such kits

are meant for use by trained personnel who can evaluate on the scene the indication, benefit, and risk of treatment with epinephrine in individual cases.

5. It would be optimal for epinephrine to be available in all schools for use by nurses or trained individuals to administer to students or staff presumed to be having anaphylactic reaction. School nurses and other supervisory personnel should receive periodic in-service training concerning anaphylaxis, the proper use of epinephrine, the importance of emergency procedures and physician notification after the injection, and proper record keeping.

In summary, we support the education of the lay and professional public to promote the prompt availability and administration of epinephrine for the emergency treatment of anaphylaxis, as well as optimal avoidance and preventive measures after the successful treatment of anaphylaxis.

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