

Guidelines for managing anaphylaxis in children need an update

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Dr. Moshe Ben-Shoshan. Credit: McGill University Health Centre

Treatment guidelines for managing anaphylaxis in children should be reassessed, according to a new Canadian study published in the *Journal of Allergy and Clinical Immunology: In Practice*.

Involving nearly 3,500 patients, it is the largest study to assess the

clinical outcomes of pre-hospital treatment of [anaphylaxis](#), including the use of epinephrine autoinjector, antihistamines (such as diphenhydramine known most commonly as its brand name Benadryl) and corticosteroids. Of the patients examined, 80 percent were children aged 1 to 17 years.

"We found that steroids, which are part of the treatment plan for managing anaphylaxis, can have a [negative effect](#) on patient outcomes," says AllerGen researcher Dr. Moshe Ben-Shoshan, a pediatric allergist and immunologist at the Research Institute of the McGill University Health Centre (RI-MUHC) and at the Montreal Children's Hospital of the MUHC.

The researchers found that admission to the [intensive care unit](#) or the hospital ward was nearly three times more likely in cases where anaphylaxis was treated with steroids in the pre-[hospital setting](#) (e.g.: at home, at school, or with the paramedics).

"Although we could not comment on the use of steroids in the emergency department (ED) specifically, our results suggest that their role in anaphylaxis management guidelines should be reassessed," adds Dr. Ben-Shoshan, who is also an assistant professor of Pediatrics at McGill University.

The researchers analyzed data from nine EDs in five provinces across the country between 2011 and 2017, as part of AllerGen's nationwide Cross-Canada Anaphylaxis REgistry (C-CARE) project. C-CARE is led by Dr. Ben-Shoshan and is the first prospective study on anaphylaxis to assess the rate, triggers and management of anaphylaxis in different provinces and settings.

Anaphylaxis, a sudden and potentially life-threatening allergic reaction, was defined in the study as a reaction affecting at least two organ

systems (e.g.: problems breathing, hives on the skin, and/or a sudden drop in blood pressure).



Sofianne Gabrielli. Credit: McGill University Health Centre

The study also highlighted the benefit of using an epinephrine autoinjector to manage anaphylaxis.

"Our study shows, for the first time, that the use of an epinephrine autoinjector in the prehospital setting has a significant positive impact on the clinical management of anaphylaxis," says first author Sofianne Gabrielli, an AllerGen trainee and a research associate at the RI-MUHC.

"We looked at the use of both epinephrine and antihistamines and found that when an epinephrine autoinjector was used before arriving at the hospital, patients were nearly five times less likely to require multiple doses of epinephrine in the ED to control anaphylaxis. This protective effect was much more significant than the protection achieved with antihistamines."

According to the researchers, these results suggest that current anaphylaxis management practices should be modified, at least as applies to the pre-hospital setting, to exclude steroids and to call for the administration of antihistamines only in conjunction with epinephrine in all cases of anaphylaxis.

"It is concerning that less than one-third of reactions were treated with an epinephrine autoinjector prior to arriving at the hospital," comments Jennifer Gerdts, a study co-author and Executive Director of Food Allergy Canada, a non-profit charitable organization that educates, supports and advocates for Canadians with food allergies and those who care for them.

"The findings from this study reinforce the need to equip individuals with the knowledge and confidence to assess the signs and symptoms of anaphylaxis, and to treat it swiftly with an epinephrine autoinjector when it occurs. Our current Give and Go campaign is one educational initiative intended to achieve this, but much more is required to understand and address this significant gap."

Among the study's other findings:

- Less than one-third (31 percent) of anaphylactic reactions were treated with [epinephrine](#) before arriving at the hospital. Antihistamines were used in 46 percent of cases and steroids in 2 percent of cases in the pre-hospital setting.

- The majority of the anaphylactic reactions were caused by food (79 percent), while 5 percent were caused by drugs and 2 percent by venom.
- The most common food triggers causing anaphylaxis were peanut (21 percent), tree nut (15 percent), egg (7 percent), and milk (7 percent).
- The majority of anaphylactic reactions were of moderate severity (74 percent) and the most common settings in which reactions occurred was at home (55 percent).

More information: Sofianne Gabrielli et al, Evaluation of Prehospital Management in a Canadian Emergency Department Anaphylaxis Cohort, *The Journal of Allergy and Clinical Immunology: In Practice* (2019).
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