

# Helping kids manage side effects of allergy treatments

January 28 2019, by Melissa De Witte

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For children undergoing immunotherapy – a promising treatment for peanut allergies – uncomfortable side effects can induce anxiety, perhaps to the point of skipping doses or dropping treatment entirely.

But guiding young patients to the mindset that uncomfortable side effects are a sign that treatment is working can help reduce anxiety, according to new research by Stanford psychologists.

The study, published Jan. 28 in *Journal of Allergy and Clinical Immunology: In Practice*, found that when children perceived mild reactions to immunotherapy as useful, they were less anxious about symptoms and also less likely to skip doses that would impede treatment. They were also less likely to experience side effects at the end of their treatment when real peanuts are introduced – which for some patients can induce anxiety all over again.

## Promising treatments

Almost 6 million American children and adolescents have food allergies. Oral immunotherapy is an emerging treatment whereby patients gradually consume tiny doses of the allergen until they build tolerance to it.

During treatment, patients can experience mild but fleeting side effects, like an itchy mouth or congestion. These reactions are evidence that the treatment is working, but for some patients, it can cause anxiety because of its association with a larger, more severe allergic reaction.

"We know from decades of clinical trials that oral immunotherapy is likely effective in protecting from accidental exposure to food allergens," said Kari Nadeau, the study's lead physician and co-author. "But I've seen firsthand how challenging this treatment can be for patients and their families to complete. Experiencing symptoms during treatment can be a source of anxiety that can lead patients to end treatment early, so we were particularly eager to find a [mindset](#) that could help patients come to understand symptoms in a more adaptive way."

## Applying a positive mindset

The study builds on ongoing research at the Stanford Mind & Body Lab about how mindsets – thoughts, beliefs and expectations – can influence behavior and health outcomes.

Sometimes uncomfortable symptoms indicate healing, said Lauren Howe, a postdoctoral research fellow in psychology and lead author on the study. For example, a fever means that a body is fighting an infection. When a cut is inflamed and itches, it is a sign the wound is healing.

"In these cases as well as others, you could think of symptoms not just as unfortunate side effects, but as signals of healing: what we called a 'symptoms as positive signals' mindset," Howe said. "But we thought that people might often miss this mindset about symptoms, only seeing the negative aspects of symptoms. So we thought an intervention that made this mindset salient could have a lot of potential."

To test this theory, the researchers recruited 50 patients age 7 to 17 at the Sean N. Parker Center for Allergy & Asthma Research at Stanford. Families were randomly split into two groups: a "symptoms as side effects" mindset and a "symptoms as positive signals" mindset. Both groups received identical treatment instructions and were trained for medication use (e.g., antihistamines) for non-life-threatening symptoms, as well as access to the same resources.

However, families assigned to the "symptoms as positive signals" group were encouraged to think of mild non-life-threatening side effects (e.g., itchy throat, congestion) as signs that their child was building tolerance to the allergen. This mindset was reinforced through direct communication between providers and families, written information and also activities – for example, children wrote letters to their "future

selves" that included a reminder that these symptoms signaled treatment was working. The "symptoms as side effects" group were not introduced to this framing during their treatment.

The researchers found that patients who were told that mild symptoms were positive were less anxious when they experienced these reactions during treatment compared with those in the "symptoms as side effects" group. During the first month of treatment, 21.4 percent of patients who had symptoms reported feeling either kind of worried or extremely worried, compared with 45.5 percent of patients in the side effects group.

The same was true for parents: At the end of treatment, 40 percent of parents in the "symptoms as side effects" group reported still feeling kind of worried or extremely worried when their child had symptoms during treatment, compared with 23.1 percent in the "symptoms as positive signals" group. Families in the "symptoms as positive signals" group were also less likely to skip or reduce doses because of symptom-related anxiety: 4 percent missed a dose compared with 21 percent.

There were physiological benefits to focusing on a positive mindset as well. By the end of their six-month immunotherapy treatment when doses increased, children in the "symptoms as positive signals" group experienced fewer non-life-threatening symptoms: 1.2 percent versus 3.5 percent. This finding is notable because [symptom](#) occurrence can prevent or delay patients from completing treatment, the researchers said.

"We have shown that a simple change in the way we frame and discuss side effects of a treatment can have a meaningful impact not only on anxiety and adherence but also on the physiological benefits of that treatment," said Alia Crum, the principal investigator at the Stanford Mind & Body Lab and senior author of the paper. Crum is an assistant

professor of psychology at Stanford's School of Humanities and Sciences.

## Next steps

The results from the study are promising for helping patients cope with symptoms from other [medical procedures](#) where uncomfortable [side effects](#) indicate treatment effectiveness, such as flu vaccines or possibly chemotherapy.

"My hope is that this study sparks a wave of similar experiments designing and testing psychologically informed changes in the manner in which medical treatments are delivered," Crum said.

Meanwhile, the researchers hope that medical providers can put this mindset intervention into practice.

"We hope that this intervention can be successfully adapted into clinical practice to help [oral immunotherapy] practitioners reduce anxiety among their patients and to make this very promising treatment even more effective and stress-free for [patients](#) and their families," Howe said. "In the long term, we think that these findings have promise for improving other challenging courses of treatment."

**More information:** Lauren C. Howe et al. Changing Patient Mindsets About Non-Life-Threatening Symptoms During Oral Immunotherapy: A Randomized Clinical Trial, *The Journal of Allergy and Clinical Immunology: In Practice* (2019). [DOI: 10.1016/j.jaip.2019.01.022](https://doi.org/10.1016/j.jaip.2019.01.022)

Provided by Stanford University

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