

Dr. Mariam Hanna:

Hello. I'm Dr. Mariam Hanna, and this is The Allergist, a show that separates myths from medicine, deciphering allergies, and understanding the immune system.

On this side of the bench, I hear a lot of stories about allergic reactions. Each story is retold by the family when they're coming to the clinic. So, some stories follow a sequence, and others are just, like, fragments of events, emotions, questions, and even more emotions. This one I'm going to tell you about was a young girl.

She coughed when she reacted, kind of sporadically. Rash started to appear, pop, pop, pop. Hives everywhere, and her stomach started to hurt. In her case, she had seasonal allergies and some asthma, and maybe it was just a flare. Minutes passed by. She's getting worse. They had listed one reaction after the other in the past. That one wasn't bad. That one was a little scary. But this one, this time was by far the worst. They had told me before they managed them all through a combination of observation and often with an antihistamine Benadryl. They would tell me, we use the other ones for seasonal allergies, but that's our go to. What about epinephrine? I had asked them before. "Oh, no. If she were to get worse, then we would use it. It's dangerous. No, then we'd have to call an ambulance. I can't stand just sitting in the hospital for another one of this many hours or just sitting there. It's really never been that terrible." But this last time, they told me about, this last story, it was just awful. A nervous laugh. Then they avoid my gaze, and we pause for a moment and think.

Anaphylaxis, a severe, life threatening allergic reaction and the crippling factors that make patients parents and bystanders process while they watch the whole story unfold. The more knowledgeable they are, the harder I grapple to understand what happened. Like, where are the roadblocks?

Today's episode was inspired by those families, too many to actually tell you about, but especially the ones gripped with fear that the moment that they would need to act, they might avoid delay or just freeze.

In August 2023, the Canadian Society of Allergy and Clinical Immunology released guidance for Allergists and Immunologists entitled Considerations for At Home Management of Food Induced Anaphylaxis We are pleased to welcome lead author on this guidance, Dr. Elissa Abrams, to today's episode.

Dr. Elissa Abrams is an associate professor at the University of Manitoba and holds an adjunct appointment at UBC. Dr. Abrams is president of the allergy section of the Canadian Pediatric

Society, chair of the food allergy anaphylaxis section of the CSACI and member of the Joint Task Force on Practice Parameters. She has also published over 200 articles in peer reviewed journals and co-authored over 15 allergy practice guidelines through the CPS and the CSACI, including the CSACI's most recent guidance. Dr. Abrams, thank you so much for taking time out of your busy schedule to join us and welcome to the podcast.

Dr. Elissa Abrams: Thanks for having me.

Dr. Mariam Hanna: All right, Dr. Abrams, I'm really excited about today's conversation, if you can't tell already. But I think we have to start with the basics. So can we go back? What is anaphylaxis?

Dr. Elissa Abrams:

So, that's a great question, and it's actually not a basic one. Anaphylaxis has some things that are very straightforward and some things that are actually a lot more complicated. So, anaphylaxis in general is an immediate life threatening or potentially life threatening reaction. It often happens after you've been exposed to an allergen, and it usually goes away pretty quickly. It usually resolves quickly. But what becomes much more complicated are the underlying mechanisms of anaphylaxis. So we often think anaphylaxis is IgE mediated. A typical allergy cell is triggered by an allergen, and that's often the case, for example, for foods. But anaphylaxis can be immune or non immune mediated. There are actually many different mechanisms by which anaphylaxis can happen.

Dr. Mariam Hanna:

Mind blown, non-immune ways by which anaphylaxis can happen. So how have things changed over time? Like, how has our understanding of anaphylaxis and things about anaphylaxis progressed, let's say, over the past decade? What's been different?

Dr. Elissa Abrams:

Sure. So I think some things have stayed relatively the same, and I suspect we'll talk a little bit about those, including how you treat anaphylaxis. What I think we're increasingly learning is that while anaphylaxis can be life threatening and of course, you have to recognize and treat anaphylaxis quickly, the actual risk of mortality is very, very low. You're looking in the order of one to ten per million. It's low, low numbers. And so because we're recognizing that, we're starting to say maybe there are different ways that we can approach how we manage anaphylaxis compared to, say, ten years ago.

Dr. Mariam Hanna:

So you talk about kind of what hasn't changed in managing anaphylaxis. So even though our risk of dying is, I've also heard it, compared to being struck by lightning and dying. So that one always resonates.

Dr. Elissa Abrams:

That's about right. Yep.

Dr. Mariam Hanna:

It is actually. I grew up in Alberta, so I've seen people get struck by lightning and live. So struck by lightning and dying is always shocking. So why epinephrine then?

Dr. Elissa Abrams:

Right, so epinephrine is the only life saving intervention that we can do for anaphylaxis. It helps the heart, it helps the respiratory system, it causes vasoconstriction. People often think that a lot of the adjunct measures that we use for anaphylaxis, antihistamines, and steroids may have a role to play. But really, the management of anaphylaxis is pretty straightforward. The only thing that works and is a life saving intervention is epinephrine.

Dr. Mariam Hanna:

Is it safe? Like, what if the kid isn't really in anaphylaxis? Is it safe to give epinephrine?

Dr. Elissa Abrams:

Yeah. So that's also an easy answer. Yes, the answer is always that it is safe. There is, like, no contraindication to using it ever. Even in children with cardiac disease, serious adverse events are incredibly, incredibly rare. If it's used correctly, it is always safe. The symptoms that you get from it, pallor, tremor, palpitations are similar to a flight or fight response and your body is naturally producing epinephrine when you're having an allergic reaction. So yes, it is always safe to use.

Dr. Mariam Hanna:

So if not every reaction progresses to death. And we said that's very unlikely or uncommon. Does every reaction need epinephrine? I find that's a hard topic to discuss with families.

Dr. Elissa Abrams:

It is a hard topic to discuss and it is a bit of a gray area. So I would say yes, if it's true anaphylaxis, and there are different ways you can define anaphylaxis. But for example, if there's two body systems that are affected, if the child has low blood pressure, then the answer is yes, I would always use epinephrine. I also say, although this would vary I imagine allergist by allergist, if you're ever in a remote location, that you should always use epinephrine, even if you're not sure, just because it can take a little bit longer to get medical help if you need it. If it's a milder reaction, so for example, hives only or facial hives only, that's a bit of a grayer area. But once again, the short answer is, if you're ever thinking should I use an auto injector or epinephrine or should I not, the answer is always, yes, you should use it. It's always safe and it may be life saving.

Dr. Mariam Hanna:

So a lot of times I have families that end up in the emergency department when they're trying to debate like, are they reacting? Are they not? Is this bad? Is this not? And in the end, they get a dose of steroids, observation, and that's it. Do steroids help in the management of anaphylaxis? What's changed about that?

Dr. Elissa Abrams:

So this is when we're looking at management of anaphylaxis, one of the things that's changed, and there are more and more studies that don't show that steroids really make any difference at all. And in fact, increasingly, guidelines are coming out and saying, don't bother using them. They don't help the immediate reaction, they take a long time to kick in. And people used to use steroids thinking they may help prevent a secondary or biphasic reaction and increasingly there are studies that show it doesn't even really do that. So no, there isn't great evidence for the use of steroids and anaphylaxis.

Dr. Mariam Hanna:

So then antihistamines, you've mentioned, kind of, antihistamines. Maybe they're having a mild reaction, okay, so this also happens, the Benadryl, I think we have to talk about Benadryl. We can't have a good discussion.

Dr. Elissa Abrams:

Let's talk about Benadryl.

Dr. Mariam Hanna:

All right, so our emergency department is like, first, A is for airway, B is for Benadryl. Is that correct? Should we even be saying that now?

Dr. Elissa Abrams:

So no, we should not be saying that. I would say B is for bad. I do not like any first generation antihistamine. So the reason that in general we're actually moving very far away from first generation antihistamines like Benadryl is that they cross the blood brain barrier, they cause sedation, they interfere with cognitive function, they have poor sleep quality. And also one of the symptoms of anaphylaxis is sedation. If you give Benadryl and a child gets tired, I find it's hard to differentiate is this a worsening reaction or just the side effect of the medication? There's been some really interesting work. If you look at, for example, car crashes, they don't measure Benadryl or other first generation antihistamines in the blood, but the Civil Aerospace Medical Institute does. And they actually found over, I think it was about 15 years, 6% of fatal airplane crashes were related to first generation antihistamines being in the bloodstream.

Dr. Mariam Hanna:

That's crazy.

Dr. Elissa Abrams:

Yeah, that's crazy.

Dr. Mariam Hanna:

But I still have, like I promise you, they still come in and they say, we carry this non-sedating for all of our other issues, and we carry this just for food allergy reactions.

Dr. Elissa Abrams:

And this has been studied, and it's been shown that physicians, pharmacists and patients will often choose it. It's one of the oldest antihistamines. It's been one of the best studied, but unfortunately, that doesn't mean it's one of the best. And even for other allergic conditions like rhinitis, I don't like it because it's been shown to reduce cognitive performance, for example, in school the next day because it's so sedating.

Dr. Mariam Hanna:

Yeah, no, I agree with you. The CSACI some years ago released guidance on that, and I find that the uptake and implementation of it has been slow.

Dr. Elissa Abrams:

Yeah, I would agree with that.

Dr. Mariam Hanna:

Have you given some thought as to barriers, as to what has been the barrier with this kind of guidance?

Dr. Elissa Abrams:

Yeah, that's a great question. I don't have a great answer there. I think sometimes established patterns are established patterns. It's been around forever. It's approved in a very young age range. It's the most studied in very, very young children. And I think that may be one of the barriers. But I have the exact same experience. I have families coming in all the time choosing first generation antihistamines.

Dr. Mariam Hanna:

Interesting.

Dr. Elissa Abrams:

Yeah.

Dr. Mariam Hanna:

All right, so the real reason, no, the other reason people tell me they're going to the emergency department is they're monitoring for this biphasic reaction. A lot of knowledge has kind of come

about the real incidence of biphasic reactions. Can you explain first, what it is and then give us some ideas as to what's changed in this space?

Dr. Elissa Abrams:

Sure. So a biphasic reaction basically means you've had an allergic reaction. It has completely gotten better, and then it comes back. And the time interval in which it comes back is somewhere between one to 72 hours after the initial reaction has resolved. When you look at how common it is, older studies would say five to 20%. And this was part of the prolonged observation in the emergency room after an allergic reaction was to see, are they going to have a secondary reaction? We're now seeing much lower numbers in the range of anywhere from at the top 5% to in some studies in kids, less than 1% have biphasic reactions. The other thing that's changed, that has, I think, helped us a lot, is that we now have some better predictors of who's at risk of a biphasic reaction. So when we're looking at a child, we can say, is this child really at higher risk? Do we have to watch them for an extended period of time? And in general, an easy rule of thumb is if the reaction has been severe or if they've had biphasic and a phylaxis in the past, they're at higher risk of having it again.

Dr. Mariam Hanna:

Are there any other risk factors that people should know about for increasing your chance of having a biphasic reaction?

Dr. Elissa Abrams:

So those are the two big ones that I know of. Basically, if they've had a severe initial reaction, if they've needed multiple doses of epinephrine, or if they've had a biphasic reaction in the past. There are other risk factors for severe anaphylaxis. Like, for example, if a child has asthma, that always worries me. If they have cardiovascular disease, that's always a concern. Or if they have mastocytosis. So those would be other kids you'd want to watch more closely.

Dr. Mariam Hanna:

Do you have a sense of how good we're doing as a general population in managing anaphylaxis? We talked about challenges with the definition, but how well are we at saying that's anaphylaxis and it's treated properly?

Dr. Elissa Abrams:

Right. Well, I do know of some studies looking more at how often epinephrine is being used, mostly in the community, and I think the general theme there and it probably largely applies, is that it's vastly underutilized for a variety of reasons.

Dr. Mariam Hanna:

Ah, well, I think that's a perfect segue to talk about the CSACI statement. So under the direction of lead author Dr. Abrams, once again the CSACI released their first of its kind guidance for allergists and immunologists entitled Considerations for At Home Management of Food Induced Anaphylaxis. This guidance gets people talking. Whenever I've brought it up with families, it's almost like I've removed a ball and chain off their auto injectors.

Dr. Elissa Abrams:

Yes.

Dr. Mariam Hanna:

Tell me, why was this guidance drafted to begin with?

Dr. Elissa Abrams: Okay, so this guidance started during COVID, and it started in the US. And it was largely a way to keep families that didn't need to be in the hospital out of the hospital. There are a variety of factors and reasons why that was really important at that particular, you know, even as we move past that, there are many reasons why this statement may be helpful. The first is, as you've mentioned, that paradoxically, having to go to the hospital has been shown to be a barrier to using epinephrine. We know that epinephrine is the only life saving intervention, and we want to make sure families use it. And going to the emergency room is not because you used epinephrine, it's to monitor for those biphasic reactions which we're seeing are less and less common. We can largely predict them. And the fatalities from biphasic anaphylaxis are also exceptionally rare. And once again, the best way to prevent them is to use epinephrine. So the goal in an allergic reaction is that you don't have to be seen. And I'm sure we'll get into this in general, if an allergic reaction is getting better, the goal is to use epinephrine quickly.

Dr. Mariam Hanna:

Does this apply to all ages? I know we've said families and kids before, but is there a specific age range that we're aiming for with this kind of guidance? Is it all ages?

Dr. Elissa Abrams:

So there is no specific age, although I'm always a little bit more cautious with infants just because of pre-verbal or less verbal children. But no, it is meant to include all ages.

Dr. Mariam Hanna: And why is it just food? I mean, we've said that it is just for food a few times. Why just food? What's different about your evidence for food versus others?

Dr. Elissa Abrams:

Yes, so the evidence isn't different, but most families that have food allergic children have auto injectors available and usually have the education about how to use it and when to use it.

Dr. Mariam Hanna:

Okay, so what's the right family or what's the right circumstance where we should be guiding them to say, like, you know what, if this happens, use your auto injector and don't dial 911 and don't go to the hospital.

Dr. Elissa Abrams:

So the first is whether the family and the caregiver and the physician is comfortable giving that advice. So any family should always still go into the emergency room if they're uncomfortable or if they're not sure about what to do. They always need to have at least two auto injectors if they're going to do this. Because just in case, there is that small chance of a biphasic reaction, you need to have a second or the acute reaction doesn't get better, you need to have a second auto injector available and then they have to be low risk. So we've talked about this a little bit, and in general, what we mean by low risk is they shouldn't have a lot of comorbidities, in particular cardio respiratory disease or mastocytosis. And they shouldn't have had a severe reaction in the past, a biphasic reaction, a severe reaction in the past. Also, they shouldn't be in a remote location. If they're more than 30 to 60 minutes from an emergency room, I'd say just go in.

Dr. Mariam Hanna:

So how do you think this guidance is going to get taken up by the community? Like, what's going to happen? Is it going to be like this Benadryl statement and we're going to be stuck for years on end, or is this going to get adopted by the walk-in clinic and the primary care community? What's going to happen?

Dr. Elissa Abrams:

Yeah, so that remains to be seen. I mean, of course my hope is that it gets adopted. I think it's going to take some education and it's going to take some time because, of course, anaphylaxis is potentially life threatening. We want to make sure that we're very careful around management of it. On the other hand, we now really know that if you use epinephrine quickly and if the child is in general low risk, the risk of anything serious happening is quite low. I think for some physicians, for some patients, this, as you said, will be sort of removing the ball and chain from the auto injector. And they'll say, 'oh, great'. The big barrier to me using it was having to go to the emerg. I think for other people it might be a little bit disconcerting and it will take some time and some education.

Dr. Mariam Hanna:

Yeah. Tell me about internationally, these kinds of guidance. what exists around the world that's like this?

Dr. Elissa Abrams:

So in the US. There now is some guidance. The Joint Task Force has put out something quite similar and said that you don't necessarily have to go into the emergency room. And it's been supported by the big sort of food allergy patient organization, patient advocacy organization in the US as well.

Dr. Mariam Hanna:

That's exciting. I think this is an exciting time for anaphylaxis. Do you worry that if we say, use your auto injector and just stay home, we're underemphasizing the importance of allergic reactions and the potential severity of the allergic reactions? You say, just take it and just stay home.

Dr. Elissa Abrams:

Yeah. And so that is the balance that we have to try to achieve. Right? The important thing is to use the auto injector, which is vastly underused. If going to the emerg is a barrier, don't go to the emerg as long as the child is low risk and is getting better. But if the child is higher risk, if the child is not getting better, the right answer, or if you're not sure the right answer, is to always go into the hospital.

Dr. Mariam Hanna:

Yeah. The Epinephrine auto injector is like our insulin for the diabetes patients, right? Like, we get very comfortable with it, and we really hope that guidance like this also makes it comfortable for families being able to access this type of, you know, I applaud this kind of guidance coming out of the CSACI. It supports a lot of the work that allergists do on the front lines and have been recommending for some time. So we're going to try something here. So, as we try to wrap up every episode, we ask the allergist of today, so that's you Dr. Abrams, to give us your top three key messages that you'd want to impart to either patients and or physicians on today's topic about anaphylaxis. Okay, what do you have?

Dr. Elissa Abrams:

So the most important, the primary takeaway is that epinephrine is the only life saving intervention. And if you're ever thinking that there is an allergic reaction, it is always safe and should be used. The second one that I would say is not nearly as important but is interesting and has been a change, is that the other therapies that we often use, like antihistamines and steroids, do not treat anything that is life threatening, like closing of the airway or respiratory symptoms, and doesn't seem to prevent biphasic reactions. So you could use antihistamines for hives, for example, but these adjunct therapies that we often rely on do not treat an acute allergic reaction. The final one, which we've just talked about, is that at home anaphylaxis management can be appropriate under very stringent circumstances.

Dr. Mariam Hanna:

All right, well, thank you so much, Dr. Abrams, for joining us on The Allergist. We appreciate your time and your insight and actually, we're looking to have you come again and join us again sometime soon.

Dr. Elissa Abrams:

Well, I appreciate you having me.

Dr. Mariam Hanna:

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