Dr. Mariam Hanna: Hello. I'm Dr. Mariam Hanna, and this is The Allergist, a show that separates myth from medicine, deciphering allergies and understanding the immune system. I don't know what it is with the diagnosis of asthma, or perhaps it's got something to do with the actual word, but seldom have I met the family that recognizes the telltale signs. You'll laugh, but even when they're coming to the asthma follow-up clinic, they'll call it everything but asthma.

Today's episode was inspired by a family I met some time ago. They blew open my understanding of how asthma is perceived. Different people, different parts of the world. Their child had chronic cough for weeks on end, worsened by a cold. Some days he missed school because of it, but for the most part, he just managed. His examination revealed a classic wheeze at the bases. He sporadically coughed during our discussion, but no one seemed to notice.

The story was all too familiar. I went about discussing the signs, the symptoms and the diagnosis. "This is all in keeping with a diagnosis of asthma," I said. "Not new. Quite common. Children carry a large burden of this disease." What sticks out in my mind actually was this family's response, complete understanding. They explained where they immigrated from, having asthma meant that you had to be prepared for asthma emergencies, prepared in a way I had never even imagined.

They would need to get an oxygen tank, have a nebulizer available at home and emergency medications, in case there was an emergency and the roads had been wiped out by a storm or they couldn't access the hospital, or worse yet, the hospital had run out of oxygen. The reality of what asthma looked like in that part of the world was eye-opening. The disparities that exist today, even across Canada, are actually still apparent, hopefully not like this. Despite it being a common disease, we have a lot of work to be done.

Today's show is being recorded in September, 2023. We're slowly approaching asthma peak week, and we are pleased to welcome with us today Dr. Andrew O'Keefe to today's episode. Dr. O'Keefe completed medical school and pediatric residency training at Memorial University. He trained in allergy and clinical immunology at the Montreal Children's Hospital, and he holds board certification from the Royal College of Physicians and Surgeons of Canada in pediatric and in allergy and clinical immunology. Dr. O'Keefe also has completed a master's in public health from the Harvard School of Public Health. Dr. O'Keefe, thank you so much for taking time out of your busy schedule to join us today, and welcome to the podcast.

Dr. Andrew O'Keefe: Thank you. I'm so excited to be here for this timely discussion, right before peak week. I've never heard it called peak week before.

Dr. Mariam Hanna: Maybe it's an Ontario phenomenon, but this is a crazy roller-coaster ride that we go on every single year, and it's almost timed to the day.

Dr. Andrew O'Keefe: We get the same thing in Newfoundland. That same phenomenon of I think it's two weeks after Labor Day, everyone's getting sick. Particularly for children with asthma, we see a peak in exacerbations, peak in admissions, all those sorts of things too. I'd say all across North America, we should all be mentally gearing up for it.

Dr. Mariam Hanna: Brace yourselves. During the first couple of years of lockdown, I don't know, it fazed me. Did you guys notice it where you were at? It went quiet, and I for a while thought this was the end of asthma, the end of peak week, and everybody was going to be well controlled moving forward. It's a sad reality. I want to walk us back a little bit to get us started, if you're okay with it. I want to walk back to a general understanding of what is asthma and perhaps what's changed about our knowledge of asthma or the diagnosis itself of asthma, just to get us started, if that's okay.

Dr. Andrew O'Keefe: Yeah, for sure. When I think about asthma, I'm really thinking about inflammation in the airways, and my teachers from medical school have to forgive me, because I can't remember. There's three things. Something about smooth muscle hypertrophy, increased mucus production, increased reactivity. Maybe those are the three things.

They sound close enough to me, but really what we're talking about is inflammation that's happening in the airways, and this is an inappropriate level of inflammation. When it's narrowing the airways or the tubes that connect our mouth and our nose down to our lungs, when those tubes get narrow and we try to exhale through them, they make this squeaking, wheezy noise, which is the real hallmark for asthma as you had mentioned before, the expiratory wheeze at the bases of the lungs.

That for me was the thing that I held onto about asthma for a long time. I think that as time has gone on, we would initially, and still the first steps in treating someone who has asthma, would be to try and control that inflammation. Initially, if someone is just having symptoms occasionally, we might use on-demand medications or reliever inhalers that work just for a short period of time, but allow those airways to open up again by relaxing the smooth muscle.

Then for more longer-term control, we're looking at using medications that allow us to decrease the level of inflammation in the lungs on a more long-term basis, so that you're not getting the dangerous things that follow from asthma like airway remodeling and more irreversible changes that can happen when you have this chronic picture of inflammation going on in your body. Chronic inflammation in your body anywhere is not a good thing, so we want to avoid that if we can.

I guess, as time has gone on and we've learned more about asthma, and particularly now in the last decade or so as we have access to more and more of a new class of medications called biologics, it's like a

chicken-and-egg thing. We have learned a lot more about asthma, but in using these medications, we've also learned a lot more about asthma, but we had to know stuff about asthma in order to get those medications in the first place. It's like this circular loop, where we are learning more and more all the time about how to better diagnose and better control folks who have asthma.

It's an exciting time to be someone who works with patients who have asthma, particularly severe asthma, because we have some great new options for treating patients. Unfortunately, as you mentioned, there's still a long way to go in terms of where we are with the basics about asthma, and that applies to patients who have asthma, that applies to healthcare providers who work with patients who have asthma. I would say that pretty much every healthcare worker will interact at some point with someone who has asthma, no matter what you do.

Dr. Mariam Hanna: I completely agree with that. That summary of your three things that you remember about the physiology of asthma is just classic. I think your teachers would be very proud, Dr. O'Keefe.

Dr. Andrew O'Keefe: Thank goodness.

Dr. Mariam Hanna: We often talk about relievers and controllers, and I see you use the exact same terms when you're discussing. The reliever medications are a way that we start, but then we eventually talk about controllers. I don't know about you, but there seems to be this huge barrier that we have from changing patients from on-demand therapy, just using a reliever, to saying, "You're not well-enough controlled, and so you need to move on to a controller." Our guidelines have even changed around that. Can you tell me about what your experience has been around that and how you have that discussion with your patients?

Dr. Andrew O'Keefe: Yeah. I think something that I see a lot of is there's this interesting thing in medicine, I don't know if you've

observed it, but there's these things that we get taught in medical school. I think in nursing school or in pharmacy school or whatever type of school you went to, you learned some facts, and you held onto them forever and it's hard to let them go.

The classic that I see would be if you have egg allergy, you can't get an influenza vaccine. We've known since 2009 that that's not the case anymore, but it is still really ingrained in people's brains and even in the forms that they use here. The public health nurses, before they give someone an influenza vaccine, they'll ask if they have an egg allergy. I'm thinking, "Can you just get rid of this question?" We know that it's not a barrier anymore, and it just creates all this concern.

With asthma there's another one, and that's around the use of the reliever and controller medications and how we used to use them, and the way that we used to teach people how to use these medications is not the way that we should be using them anymore. It used to be that ... and actually, maybe it's come full circle and we've gone back to the way that we used to do ... but the classic thinking that I hear from a lot of my patients, or what they've been told to do, is use the blue one first to open up your airway, and then use your controller medication afterwards. People are instructed to use the reliever medications that are often blue or greenish in color, so that's the way that the patients refer to it. The controller medications are often orange-red or brown or pink, so somewhere in that spectrum of the rainbow.

One of the key tools that we use to assess someone's degree of asthma control is how much of their rescue inhaler or the reliever inhaler that they're using. When someone comes and tells me, "Oh, I'm using it twice a day," and I'm like, "Okay, well were you told to use it twice a day?" They say, "Yes, it opens up my airway and then I take the orange inhaler." I say, "Okay. That's a little bit of something to undo, because you don't need to use the reliever inhaler each time that you're using your controller inhaler. The controller inhaler is once or twice a day depending on the inhaler, and then the

reliever inhaler is just as needed. If you're using the reliever inhaler every day, or even more than two to three times per week on average, then your symptoms are not controlled and we need to step up your regular plan."

Dr. Mariam Hanna: Hold on, hold on, hold on. The reliever medication is not required on a twice-daily basis? You don't need to open them up so that the medicine can drift through? I've only heard that about 10,000 times over the past couple of years.

Dr. Andrew O'Keefe: You do not need that blue inhaler to open up your airway. If you need your blue inhaler to open up your airway twice a day, something is not going right. We need to step things up other places.

Dr. Mariam Hanna: I love hearing you say that, Dr. O'Keefe. I could not agree more myself, but how much reliever use is too much? This is where the guidance has changed more recently. How much of that blue puffer or that gray puffer that you're using is too much, is not okay control?

Dr. Andrew O'Keefe: Typically what I tell patients is if they're using it on average more than two to three times per week. We want to keep that number below that two to three times per week. That's the magic number. One canister of the blue inhaler should last for about a year. If you're using more than that, then that's a sign that your asthma is not well controlled. Many people are shocked to hear that.

Dr. Mariam Hanna: Yes, because they get prescribed them like Tic Tacs almost, and they have one in many different places in their household.

Dr. Andrew O'Keefe: I think the reliever inhaler is really satisfying to use because it gives you an immediate response. You can feel it work right away. It stops the coughing. There's a cause and effect with that one. People will often say, "The blue one's the only one that works for me. I'm just going to keep using that one." What is important to educate patients about is that the orange one's not meant to work right away. It takes time, and it often

takes a month or so of using it on a daily basis before you might notice that, "Hey, I'm not needing to use my blue inhaler as much as I used to."

One of my colleagues described it to patients like, if you had a really dry field or a really dry forest and you wanted to prevent a fire, using the orange inhaler is like watering that forest every day. Using the blue inhaler is like coming in with a fire hose and just putting out the fires when they start. You want to be able to prevent the fire by using that daily watering to keep down the inflammation that's going on in your lungs, versus just having these emergencies where your symptoms are flaring up and you need to come in with a fire hose and blast it down.

Dr. Mariam Hanna: Dr. O'Keefe, you're really telling them that they should be using the dreaded steroid puffer multiple times a day, like once or twice a day, depending on how it's prescribed. Do you deal with a lot of steroid phobia or more fears out of the medication than the disease itself in your practice?

Dr. Andrew O'Keefe: Yeah. I think that a lot of people have concerns when they hear the word steroid. There may be some I guess perhaps misunderstanding about the steroids. This applies too to patients who we prescribe who have rhinitis, whether it's allergic rhinitis or another condition, nasal polyposis, that is often comorbid with severe asthma. Patients get really worried, or some patients get really worried, when they hear about this word steroid.

Using a steroid like a nose spray or an inhaled steroid that goes down to your lungs is very different than taking steroids like a pill that you would take by mouth, say, because the steroids that you inhale just go to the lungs, or just if it's a nose spray, it just stays in your nose and sinuses. That's the goal. Very, very, very little gets absorbed into the rest of your body.

It's not like there is all this steroid coursing through your system, giving you these negative side effects that we

see when people are taking the oral doses of steroids. Sometimes it ends up being what happens is people don't take their inhaled steroids, and then they need to take the oral corticosteroids because their symptoms are not well controlled, and they need to have these really big guns to calm down all this inflammation going on in their lungs.

We always knew that steroids were not great medications, but now that we have alternatives like these biologic medications for folks who have severe asthma, we're learning more and more about just how dangerous they are. Even one course of oral steroids in a year is probably enough to have important consequences for people's health. We really want to avoid the oral steroids as much as we can, whereas we encourage people to use their nasal steroid sprays, their inhaled steroids, because those are all really, really safe medications for people to use.

Dr. Mariam Hanna: That's great to hear you say that. Then we don't want to overuse the reliever. We should move forward to a maintenance or controller medication, and sometimes that means an inhaled steroid. Now, you've mentioned a few times already biologics. These have made a big change in our approach to managing asthma. Can you talk to me about when you start the discussion around biologics with your patients, and what sets you into pursuing those?

Dr. Andrew O'Keefe: Yeah. There's a few different guidelines that exist, and some great advice that I got from a mentor during my training was that when it comes to asthma guidelines, just choose one and stick with that one, because there are so many different ones that say slightly different things, it's easy to get confused. I think that's a really helpful tip for providers who are caring for patients with asthma.

We have some really great resources through the Canadian Thoracic Society. I don't know if folks have looked at the Slim Jim resources that they have online, but if you just Google CTS, Slim Jim, asthma, you'll find

some great resources. I would encourage trainees to ... I guess I was going to say print a copy and keep it in your white coat, but now I'm revealing my age. I guess take a screenshot and have it on your Palm Pilot?

Dr. Mariam Hanna: Smartphone.

Dr. Andrew O'Keefe: Smartphone, sure. When I was in third year medical school, they made us all buy Palm Pilots so that we could track our procedures and things.

Dr. Mariam Hanna: Oh, my gosh, you have just aged yourself so unbearably, I don't know if there's any walking it back at this point.

Dr. Andrew O'Keefe: Anyhow, the guidelines basically contain guidance on when we should think about stepping up, but some of the things that I think about would be people who have difficult-to-control asthma or severe asthma, where they're using inhaled medications but not getting their symptoms under control. Where if they're requiring courses of oral steroids, that's a red flag. If they're having lots of emergency room visits, then they're probably getting oral steroids too, then if they're having admissions. If you've ever been admitted to the hospital at all, or particularly if you've been admitted to the ICU or needed to be intubated, those are all warning signs that your asthma should be managed by an asthma expert.

Dr. Mariam Hanna: Wonderful. How do you particularly go about describing how biologics work? You and I have sat in conferences where they put the elaborate screen with the pathways of where the different biologics interact. Thankfully, you're going to describe this just using words for our listeners, as to how you pursue the discussion with families about the role of biologics or how do they work. How's this different than the garden hose with the grass and allergy? Where does this all fit in?

Dr. Andrew O'Keefe: Something that's neat as an allergist is that we see patients with a lot of different conditions that are amenable to treatment with biologics. It's not just something that we use for asthma. We can also use it for atopic dermatitis or eczema. We have biologics for

people who have chronic urticaria or chronic hives, again, nasal polyps. There's more and more of these indications coming down the pipeline, as we learn more about biologics and we understand the science a bit better and develop drugs that treat them.

For asthma, many of the patients who we'd be considering for biologic would have some familiarity with prednisone, because that's my biggest indicator, my biggest yardpost, to say we need to think about biologics for you. If you've had even just one course of prednisone in the last year, I'm still thinking about biologics for you. Many patients know that prednisone is a very strong anti-inflammatory ... or oral corticosteroids, generally people are using prednisone ... that it's a very strong anti-inflammatory, but it suppresses even the helpful inflammatory signals that our body uses to maintain homeostasis or just to keep the shop running kind of thing. If you're using steroids all the time and you don't get those signals, then your body runs into lots of trouble and you get lots of different side effects.

The biologics are also very strong anti-inflammatories like prednisone is, but they don't give you the negative side effects because they have a very focused way that they behave. They only target the unhelpful inflammation that we want to decrease. They generally target an allergic type of inflammation that is contributing to the asthma, and they leave the other parts alone. They help us to control where your immune system has been doing too much inflammation, and they let all the other pathways run normally in your body.

One of the great things about biologics is that they have very, very few side effects. They're exceptionally safe medications. They're typically injections that you use either every two, four or eight weeks. Oftentimes they are administered at home these days. They really give people a lot of freedom and allow them to get their asthma under control, to a point where patients are coming back to clinic and saying, "Thank you so much. I

feel like I have my life back. You've made such a difference in my life. My asthma's under control. I can exercise. I can do things that I want to do. I don't feel worried about traveling anymore."

Honestly, as a physician, one of the most satisfying parts of my job is treating people with these medications, because they have such an improvement from where they were before.

Dr. Mariam Hanna: I couldn't agree more. That has been a big experience of lots of physicians that have been incorporating the use of biologics into their clinics. I think that that's a resounding feeling that we have, is that they need less medications when they move on to this class of medications.

Dr. Andrew O'Keefe: Yeah.

Dr. Mariam Hanna: I wonder if you discuss with your families some non-pharmacological stuff for managing their asthma. Is there anything that you discuss? A lot of my families will come in and say, "Okay, so we'll do the medicine, but is there anything other than the medications that might help to give us better control?"

Dr. Andrew O'Keefe: Yeah. I think that, for all asthma patients and as allergists, we're often involved in identifying environmental allergens. That would be the first. It is kind of a medical intervention, but you don't have to take a medicine for it. If someone has a dust mite allergy, then discussing the different precautions that we take to reduce the environmental burden of dust mites in their home. I don't think I've had anyone get rid of their pets. I think they'd sooner get rid of their doctor than their dog.

Dr. Mariam Hanna: Especially if you go after the cats too. It's real.

Dr. Andrew O'Keefe: Oh, yeah. I had a patient come back and tell me that they shaved their cat like I told them to, which was not the instructions that I gave them, but sometimes what we say and what is understood are two different things. The environmental precautions that we as allergists

discuss with many patients, whether they have asthma or allergic rhinitis, are important things.

I think a lot of the general advice that people get in terms of healthy living is applicable to patients with asthma as well, in terms of getting some physical activity every day, moving your body in a way that makes you happy, eating a variety of foods that are not processed. All those types of general guidance for things that keep people healthy also keep people with asthma healthy. Probably being physically active is one of the more important pieces, I think, because we know that's important for lung function, but I think it's important for everyone because it's such a nice thing for our physical and mental health.

Dr. Mariam Hanna: Absolutely. I mean, those things go hand in hand, is that while the medications help, having a healthy lifestyle and staying active and getting as active as you can once your asthma is under good control is possible, doable, and asthma should not be your excuse to not do those things. It's possible to be well controlled.

Dr. Andrew O'Keefe: Exactly. That's often something that I'll tell patients or that I'll use as an assessment for whether their asthma is appropriately controlled. I'll ask them, "Does asthma keep you from doing anything that you want to do?" Sometimes that's like school or work. Absenteeism from either one of those things is a sign that asthma is not well controlled, but then also physical activity. We all have different relationships with physical activity, but asthma shouldn't hold you back from being able to enjoy the things that you enjoy in life. We all don't have to be professional athletes or marathon runners, but you should still be able to enjoy the things that you enjoy doing.

Dr. Mariam Hanna: I love that. I think that's how we'll wrap up this discussion around asthma, because it's wholesome and it's full-circle, right, around clarifying the diagnosis. Once we have the right diagnosis, not overusing the reliever medications, moving on to appropriate controller medications, which now includes this very

important class of biologics, and incorporating that into a healthy lifestyle. I like it.

As we try to wrap up every episode, we like to share three big key messages that you would love to relay to our audience or that our listeners and for today regarding asthma. Dr. O'Keefe, three key messages you want to impart on our listeners.

Dr. Andrew O'Keefe: Yeah, thanks for that. The three things that I thought of would be, one, know the diagnosis, or know your diagnosis. A lot of times patients do not have the diagnosis of asthma confirmed, and the test that we use to confirm asthma, there's a couple of different ones. Spirometry or a pulmonary function test is the main one. We want to have some objective evidence that you do have asthma, that there is not another diagnosis. Sometimes the diagnosis is more complicated than just doing this test one time. Sometimes we have to do multiple tests, but however we pursue it, know your diagnosis. Establish that you do in fact have asthma, so that's number one.

Number two, know your treatment. I think for patients, having an asthma action plan and understanding when to use the controller and the reliever medications is very important. It's important also to know whether your inhaled medications require a spacer device, often called an AeroChamber, because many people are not using them and they should be. That's a key observation that I've had throughout my time in practice.

The last thing is to know when you need help. This also relates back to having an asthma action plan, because an asthma action plan will tell you when you need to seek either emergency medical attention or routine medical attention. Then also, the next new thing that we have is when to be treated with a biologic, and that's also part of when to seek help.

Dr. Mariam Hanna: Wonderful. All right. Well, thank you so much, Dr. O'Keefe for joining us on The Allergist. We really

appreciate your time and insight, and hope that you join us again sometime soon. Go for it.

Dr. Andrew O'Keefe: I certainly will. I think we could have a whole podcast on asthma, in fact. There's so much to talk about.

Dr. Mariam Hanna: You should start The Asthma Podcast. I like it. I like it. This podcast is produced by the Canadian Society of Allergy and Clinical Immunology. The Allergist is produced for CSACI by PodCraft Productions. The views expressed by our guests are theirs alone, and do not necessarily reflect the views of the Canadian Society. This podcast is not intended to provide any individual medical advice to our listeners. Please visit www.csaci.ca for show notes and any pertinent links from today's conversation.

The Find an Allergist app on the website is a useful tool to locate an allergist in your area. If you like the show, please give us a five-star rating and leave a comment wherever you download your podcast. Please don't forget, share it with your networks. Thank you for listening. Sincerely, The Allergist.