

Anaphylaxis Challenges on the Front Line: Perspectives from Community Medicine

John R. Bennett, MD (Moderator),^{a,1} Leonard Fromer, MD,^b and Mary Lou Hayden, MS, RN, FNP, AE-C^{c,2}

^aCumming Internal Medicine, Cumming, Ga; ^bUniversity of California at Los Angeles, Los Angeles, Calif;

^cUniversity of Virginia, Charlottesville, Va.

ABSTRACT

This report reflects a discussion from the multidisciplinary Partnership for Anaphylaxis Round Table meeting, held in November 2012, in Dallas, Texas. Community medicine participants included John R. Bennett, MD, an internist who practiced in Cumming, Georgia, and whose patients were adults; Leonard Fromer, MD, a family practitioner in Los Angeles, California, who was the medical director of a network of 600 medical groups, including pediatricians, internists, and family physicians, and who in his previous practice treated children and adults, many of them with severe allergies; and Mary Lou Hayden, MS, RN, FNP-BC, AE-C, a nurse practitioner who treated adults in a university employee health clinic and in an allergy clinic in Charlottesville, Virginia, and whose prior practice focused on allergy and immunology in children and adults. This discussion was moderated by Dr Bennett. Participants provided their perspectives as primary care providers (PCPs) concerning anaphylaxis, which has become a major public health concern. The rising prevalence of severe allergies and incidence of anaphylaxis and other severe allergic reactions among children and adults is shifting more care to PCPs. This discussion provides insights into challenges faced by PCPs in treating patients at risk for anaphylaxis in the community setting and provides potential solutions to those challenges.

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As noted in the article in this supplement by Dr Philip Lieberman,¹ the National Institute of Allergy and Infectious Diseases (NIAID) and the Food Allergy and Anaphylaxis Network (FAAN) have defined anaphylaxis for the general public as a serious allergic reaction with rapid onset that may cause death.² (Note: As of November 12, 2012, FAAN

merged with the Food Allergy Initiative under the name Food Allergy Research & Education [FARE].) For health care professionals, anaphylaxis was characterized as a systemic reaction resulting from the sudden release of multiple mediators from mast cells and basophils; the reaction is often life threatening and usually unexpected.

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Authorship: Drs Bennett and Fromer and Ms Hayden all fully qualify for authorship of the manuscript, having all participated in the discussion upon which it is based, and having made substantial contributions to the

conception and design of the work; the acquisition, analysis, and interpretation of data for the work; and the identification and interpretation of the appropriate published literature. All of the authors were involved in drafting and critically revising the manuscript for important intellectual content, reviewed the final manuscript, and gave approval for submission. Drs Bennett and Fromer and Ms Hayden are all accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Requests for reprints should be addressed to John R. Bennett, MD, Internal Medicine Practitioner, Effingham Family Medicine at Port Wentworth, 7306 Highway 21, Suite 105, Port Wentworth, GA 31407.

E-mail address: jrb1003@hotmail.com

¹Current affiliation: Effingham Family Medicine at Port Wentworth, Port Wentworth, Ga.

²Current affiliation: BreatheAmerica Richmond at Glen Allen, Va.

The prevalence of anaphylaxis is difficult to ascertain, with some estimates as low as 0.03% and others as high as 15%, although most estimates are under 2.0%.^{3,4} Factors such as age, medical history, and geographic location can all influence the rates of anaphylaxis in a given patient population.³⁻⁵ In addition, the prevalence of anaphylaxis is increasing,⁶⁻⁸ such that primary care providers (PCPs) are increasingly likely to provide care for patients at risk for anaphylaxis.

This report reflects a discussion from the multidisciplinary Partnership for Anaphylaxis Round Table meeting held in November 2012, in Dallas, Texas. Participants provided their perspectives as PCPs in the community medicine setting in a discussion moderated by John R. Bennett, MD. Participants included Leonard Fromer, MD and Mary Lou Hayden, MS, RN, FNP-BC, AE-C. At the time of the round table, Dr Bennett was an internist practicing in Cumming, Georgia, whose patients were adults. He now practices in Port Wentworth, Georgia. Dr Fromer was a family practitioner in Los Angeles, California, and the medical director of a network of 600 medical groups, including pediatricians, internists, and family physicians. In his previous practice, Dr Fromer treated children and adults, many of whom had severe allergies. Ms Hayden is a nurse practitioner who currently practices in a Virginia allergy and immunology subspecialty group (BreatheAmerica Richmond). At the time of the round table, she treated adults in a university employee health clinic and in an allergy clinic in Charlottesville, Virginia. Before that, her practice focused on allergy and immunology in children and adults. Although this discussion reflects their individual practices, it is hoped that other PCPs and specialists will find useful points that they can apply to their own settings.

FROM WHERE DO ALLERGY PATIENTS COME TO YOUR PRACTICE?

Dr Bennett: My patients are all adults, most of whom have had their allergies and anaphylactic triggers identified and who come to me for continuity of care. If they are sent to me from the emergency department (ED) after an anaphylactic reaction, I refer them to an allergist. Once one anaphylactic trigger is identified, there is a good chance that other potential triggers exist, and the allergist is best equipped to uncover them.

Dr Fromer: In our family practice setting, one third of our allergy patients were referred by other PCPs in our network for an allergy evaluation work-up. Another third were referred from the ED, and the last third were patients in my own practice who developed anaphylaxis.

Ms Hayden: In an allergy and immunology practice, most of our patients have already had an event and are referred either directly from the ED or from their PCPs. Nurse practitioners (NPs) in primary care practices are an important source of referrals.

WHAT ANAPHYLACTIC TRIGGERS ARE MOST COMMON IN YOUR AREA?

Dr Bennett: The most common anaphylactic triggers among my patients in Georgia are insect stings/venom, followed by food, and then medications. Latex also is a fairly common trigger in my practice.

Dr Fromer: In the practices in my network, the most common anaphylactic trigger is food. In my own practice in urban southern California, the weather is so dry that insect stings are not very common.

Ms Hayden: Food is the most common trigger in Virginia, followed by stinging insects, drugs, and idiopathic causes.

IN WHAT ENVIRONMENTS DO YOUR PATIENTS MOST COMMONLY EXPERIENCE AN ANAPHYLACTIC OR SEVERE ALLERGIC REACTION?

Dr Bennett: The most common environment for my patients is the outdoors (stings or venom), followed by the workplace (latex), home (food and medications), school, and transportation ([Table 1](#)).

Dr Fromer: In southern California, where food is the most common anaphylactic trigger, the home, restaurants, and school were the most frequent environments for an anaphylactic reaction, followed by the outdoors. There is great awareness about removing latex from the workplace in our area; therefore, I have not seen many exposures to latex.

Ms Hayden: Home, school, and restaurants most commonly, and in the case of venoms, home and recreation sites.

Table 1 Comparison of Settings in Which Patients from Each Practice Experience Anaphylaxis			
	Bennett (Georgia)	Fromer (Southern California)	Hayden (Virginia)
Rank	Internal Medicine Practice	Family Medicine Practice	Allergy and Immunology Subspecialty Group
1	Outdoors	Home	Home
2	Workplace	Restaurants	School
3	Home	School	Recreation sites (venom)
4	School	Outdoors	Restaurants
5	Transportation	Workplace	—

ARE YOU THE HEALTH CARE PRACTITIONER (HCP) WHO PRIMARILY MANAGES THESE PATIENTS' ALLERGIES?

Dr Bennett: Yes. Because most of my patients are aware of their allergies, my role is to educate them on anaphylaxis as well as the proper use of the epinephrine autoinjector.

Dr Fromer: I also managed my patients' allergies in my previous practice. In my current network, PCPs are trained on the use of allergy screening tools and testing for triggers and generally have more responsibility for first-line care than PCPs outside of the network.

Ms Hayden: Yes, in consultation with my primary care colleagues.

ONE OF THE CHALLENGES ASSOCIATED WITH TREATING OR PREPARING PATIENTS FOR AN ANAPHYLACTIC REACTION IS MAKING SURE THEY TAKE THEIR CONDITION SERIOUSLY (TABLE 2). HAVE YOU OBSERVED THIS PROBLEM?

Dr Bennett: Most of my patients take their condition very seriously, especially those who have experienced an anaphylactic reaction or have come close to doing so. A big challenge is treating the patient who is at high risk for an anaphylactic reaction but has never had one.

Dr Fromer: Most of our patients also take their condition seriously. However, some patients have a passive attitude. They know they have a serious condition, but they do not prepare for an emergency. For example, they do not carry epinephrine autoinjectors or ensure that they have autoinjectors otherwise available.^{9,10} Clinicians have an important role in making sure patients are engaged in their own preparedness and therapy.

Passivity is a ubiquitous problem with chronic conditions. Data from the Patient-Centered Medical Home (PCMH) movement indicate that patients have an attitude of “I am sick and clinicians have to treat me.” This is a passive, broken model. An active, better model is a patient thinking, “I want to get better, and I need your help.” One way this can be achieved is by implementing the Wagner Chronic Care Model, which has been shown to be successful in many therapeutic areas.¹¹⁻¹⁵ Motivational techniques and tools can engage and activate the patient. For example, clinicians can provide patients with information about their disease and condition to enhance their knowledge and motivate them. The question becomes, how can clinicians both educate and motivate?

Dr Bennett: For patients with other chronic medical problems, such as diabetes, hypertension, hypercholesteremia, or asthma, their conditions are at the forefront of their minds because they require daily attention. This is not the case with potential anaphylaxis. Patients may never have experienced a severe anaphylactic reaction, or it may have happened 20 years earlier, such that it becomes a distant memory and a secondary medical problem for them.

Ms Hayden: My patients typically take their risk for anaphylaxis seriously. In many cases, the patient’s perception of the seriousness of his/her risk also depends on the severity of the allergic reaction. In my experience, the more severe the reaction is (eg, patient had multiple symptoms, required epinephrine, was taken to the ED), the more likely it is that the patient will become involved in learning about their sensitivity, how to avoid it, and how to follow the treatment plan. Therefore, clinicians should ensure that patients understand the significance of their risk, the possibility of a more serious reaction with subsequent exposure, relevant avoidance measures, early recognition of symptoms, and treatment with an epinephrine autoinjector. For example, one study demonstrated that training of patients

Table 2 Potential Challenges in the Management of Anaphylaxis	
Patient factors	
Passive attitude	
Consideration of anaphylaxis as a secondary medical problem because it does not require daily attention	
Lack of adequate preparation/follow-up by patients	
Not filling prescriptions	
Not carrying at least 2 epinephrine autoinjectors	
Carrying expired autoinjectors	
Failing to go to the ED after using an epinephrine autoinjector	
Other factors	
Cost of the epinephrine autoinjectors, particularly when physicians are prescribing 2 autoinjectors for each of multiple locations	
Limited patient/family health literacy	
Challenges for pediatric patients	
Ensuring that children have immediate access to epinephrine autoinjectors in several locations, such as home, school/preschool, daycare, and grandparents' homes, especially if these children are living with or visiting parents who themselves live in different locations	
Determining how children will carry autoinjectors and who will ensure that they carry them from location to location	
Identifying the caregiver responsible for tracking expiration dates and locations of multiple epinephrine autoinjectors	
Identifying the age at which the child is considered sufficiently mature enough to carry and decide when to use an epinephrine autoinjector	

and their families at a multidisciplinary pediatric allergy clinic, even in a single visit, improved their ability to manage allergic reactions by 185.4% and to correctly identify the 3 critical steps for epinephrine autoinjector use by 83.3%.¹⁶ All at-risk individuals should have immediate access to epinephrine autoinjectors.¹⁷

WHAT OTHER CHALLENGES ARE FACED WHEN EDUCATING PATIENTS ABOUT MANAGEMENT OF ANAPHYLAXIS?

Dr Bennett: As discussed earlier, patients may become passive or see anaphylaxis as a secondary problem. Consequently, these patients begin to overlook their risk for anaphylaxis and consciously or subconsciously neglect to carry an epinephrine autoinjector. The challenge is getting patients to fully understand the consequences of anaphylaxis in the absence of immediate access to an epinephrine autoinjector.

Dr Fromer: I agree with Dr Bennett. I face the same challenge with my patients.

Dr Bennett: Although I always write prescriptions for 2 dual-packs of epinephrine autoinjectors with refills and I advise my patients to carry 2 epinephrine autoinjectors at all times, I do not know of anyone who actually carries both. This is problematic in the case of a biphasic or protracted reaction. Typically, patients who have 2 epinephrine autoinjectors carry one with them and keep the other in a location where they spend a significant amount of time, such as the office or the car.

There are several questions to ask patients during allergy counseling. First, how many epinephrine autoinjectors does a patient need for a specific situation? (Patients should have ready access to at least 2 devices at all times.) Second, are patients keeping track of the functional status of each autoinjector and its expiration date? Third, would they remember where an epinephrine autoinjector is when they need it? Fourth, what if the autoinjector got moved or displaced? Is it stored under lock and key, or is it accessible for them to use in an emergency? These are sample questions among many other questions and scenarios that I discuss with my patients.

Dr Fromer: Most patients like to keep one epinephrine autoinjector in the glove compartment of the car and another with them, assuming that the car will always be close by whether they are at work or in the mall, and that they will run and get the autoinjector if they need it. There are many problems with this scenario. First, there might not be enough time to run and get the epinephrine autoinjector if a patient has a severe reaction. Second, has the epinephrine autoinjector in the glove compartment expired? Third, in parts of the US, the temperature in the glove compartment may reach 48.9°C (120°F) at one extreme or be below zero at the other, and autoinjectors are supposed to be stored at 20-25°C (68-77°F), with excursions permitted only to 15-30°C (59-86°F).¹⁸⁻²¹ This is a big challenge.

Ms Hayden: I agree with Dr Fromer, and there are additional challenges when you care for children. Children may be in several locations, such as school/preschool, daycare, or their grandparents' homes, and some children alternate living with and visiting parents who live in different locations. The challenges become: 1) How do you ensure that children have immediate access to an epinephrine autoinjector at all these locations?; 2) Should they carry the autoinjector in a fanny pack or something similar, and who will ensure they will carry this fanny pack with them from location to location?; 3) Does the out-of-pocket cost or insurance coverage limit access to this medication (eg, number of autoinjectors)?; 4) Who will track expiration dates and locations of multiple epinephrine autoinjectors?; and 5) At what point is a child considered sufficiently old enough and mature enough to carry and decide when to use the epinephrine autoinjector?

Dr Bennett: Another challenge already alluded to is that patients carry expired epinephrine autoinjectors.²² This is a problem that happens frequently and is one we should discuss later. The cost of the epinephrine autoinjector is another challenge that clinicians and patients face, although in my practice, no one has complained about the cost.

Dr Fromer: Prescribing one dual-pack of epinephrine autoinjectors is typically not a problem, although prescribing 2 can be difficult, and prescribing for multiple locations is a much greater problem. We have assigned one person in each of our practices to handle insurance rejections. This person describes to the insurance company the rationale for prescribing 2 or more dual-packs of epinephrine autoinjectors. Usually the insurance company then allows the prescription for multiple devices. This is the foundation of the team-based approach, where everyone participates in the care of the patient.

Ms Hayden: Carrying expired epinephrine autoinjectors may be problematic. However, I review the importance of in-date epinephrine at every patient visit or telephone call, as well as appropriate care of their autoinjectors. While cost of the autoinjectors may be a concern, most patients realize the life-saving role of epinephrine and do purchase their epinephrine autoinjectors.

Dr Fromer: Perhaps some patients do not complain about cost because they do not fill the prescription. The number of patients who refill their prescriptions is abysmal.²³ Conceivably, this is related to the model of a medication for acute rescue versus a chronic disease, where you have to obtain the medication and keep it until you need it. One other reason why patients do not fill their prescription, ironically, is the electronic prescription system. In my personal experience, the pick-up rate for paper prescriptions was approximately 50%, and it has dropped even further after the institution of electronic prescriptions. However, the electronic prescription system may decrease ambulatory prescribing errors.^{24,25}

The challenge with a chronic medication is that most patients do not know why it is prescribed, what condition a given medication will treat, and what to expect from it. It

has been demonstrated that 7.2% of patients discharged from the hospital have prescription-related problems.²⁶ Of those, 79.8% failed to pick up discharge medications and 11% did not understand how to take the medication. However, research shows that in chronic disease care,²⁷⁻³⁰ several types of interventions—such as a tailored self-management plan, one-on-one counseling session, and telephone follow-up—are effective in improving medication adherence and may have a positive impact on clinical outcomes. Therefore, when a team member calls the patient to follow up after a visit, he/she should ask 4 questions: 1) Did you pick up your medicine?; 2) Do you have any questions about what we discussed regarding how to use the medicine and why you need it?; 3) Did you have any managed care insurance problems?; and, especially if they take the medicine daily, 4) Are you having any side effects? There is no law in the US mandating that a doctor must make this follow-up call himself/herself. Consequently, appropriate team members who work in the office can make this call instead.

Ms Hayden: I think it is important for us to assess the patient's/family's health literacy and provide an instruction sheet that is both illustrative and written in an understandable form (ie, at a 4th-grade reading level). Discussion of a life-threatening event, likely allergy triggers and their avoidance, and when/how to use an epinephrine autoinjector may be overwhelming to a patient/family at a single visit. Thus, while the goal is to go paperless, I believe we need to have appropriate educational materials we can send home with the patient/family to reinforce what was taught in the clinic.

Dr Fromer: ABC News, in collaboration with the American College of Physicians (ACP), produced an interesting and vivid video series on health literacy in America.³¹ They interviewed people with different levels of health literacy and found that the patients' level of comprehension is a very important factor in communicating information and giving instructions to patients.^{31,32}

Dr Bennett: I have had good success with patients filling the original prescription. I request that patients bring their epinephrine autoinjectors with them to their follow-up office visits, and most of the time they do so.

Comment: *An anaphylaxis plan of action should be given by an HCP to patients or parents, with a copy provided for other caretakers and schools. The plan should explain how to recognize an anaphylactic reaction and what to do in case of such a reaction.*

Ms Hayden: It is important to evaluate the content of the written plan of action and determine whether patients/parents/caretakers can read and understand it. I have found some action plans to be confusing, particularly ones that categorize children as low and high risk. In 2007, one study found that only 15% of schools that had an emergency action plan for food allergy used the FAAN action plan.³³ An effort to simplify these plans of action has improved their use by patients/parents and in schools. (Note: FARE published a new and simplified food allergy action plan in

August 2013 that includes both illustrations and simple instructions. This new plan is intended to facilitate early recognition and treatment of anaphylaxis.)

Dr Fromer: Terminology and language are issues addressed in the PCMH movement—that is, compliance versus adherence versus concordance. In the compliance model, physicians stated what to do, and the patients were to comply. This did not work well, perhaps because patients had a passive role. The adherence model included the patient in the decision-making process. Although better than the compliance model, it also did not work well, as evidenced by poor adherence and low rates of prescription pick-up. In the concordance model, the decisions clinicians make with patients must be concordant with the patients' health literacy level and centered on their life and environment, including economic, cultural, religious, and family issues. The concordance concept was started in the United Kingdom, where the government rewarded PCPs if they reached quality metrics. Although the program has upfront costs, it is cost effective because of the better chronic disease management downstream. We can achieve better adherence from good concordance.

HAVE YOU SEEN EXAMPLES OF PATIENT MISMANAGEMENT OF ANAPHYLACTIC REACTIONS?

Dr Bennett: Preparedness or the lack thereof plays a major role in the safety of patients during anaphylactic reactions. Clinical practice always has interesting examples of patients who were saved by an epinephrine autoinjector or of others who were unprepared and were not as fortunate.

Dr Fromer: One of my patients with severe asthma was highly educated and intelligent and had been through all the education about the epinephrine autoinjector and what to do in case of anaphylaxis and allergic asthma. He had experienced several minor anaphylactic reactions from which he was rescued. During a Santa Ana desert wind condition carrying pollens to which he is severely allergic, he took a first-generation sedating antihistamine for his allergy symptoms. The antihistamine dried up his secretions and he started to have mucous plugging. Consequently, he began to have a breathing problem and called my office. In the 12 minutes between his call and my walking into the examination room to examine him, he developed an anaphylactic reaction and went into cardiac arrest, and we could not oxygenate him because of the mucus plugging. Paramedics rescued him with advanced cardiac life support. He was lucky because he lived very close to my office and because the paramedics arrived within 2 minutes of our call. The patient ultimately had a complete recovery.

Ms Hayden: A farmer in my allergy practice was severely allergic to yellow jacket stings, and he carried an epinephrine autoinjector in his truck. While he was out in a pasture he was stung by a yellow jacket, was unable to make it back to his truck to retrieve the autoinjector, and died. Although this story is unfortunate, it is a powerful tool to

educate patients about the importance of ready access to epinephrine or carrying the epinephrine autoinjector on their person at all times. Also, during an asthma conference, one of the attendees had an anaphylactic reaction after eating a muffin with nuts. Fortunately, another attendee had an epinephrine autoinjector that we borrowed and used to rescue her. It is sad that unpreparedness can cost patients their lives.

PATIENTS ARE INSTRUCTED TO BE SEEN IN THE ED AFTER THE USE OF EPINEPHRINE AUTOINJECTORS, BUT PATIENTS DO NOT ALWAYS GO TO THE ED

Comment: *Studies have shown that one of the reasons why patients did not use an epinephrine autoinjector was that they were instructed to go to the ED after using it. Patients may interpret this recommendation to mean that epinephrine is dangerous and, consequently, they refuse to use it.²² Additionally, patients do not like going to the ED because of the potential wait time before being seen by a clinician. Therefore, the recommendation to visit the ED after the use of an epinephrine autoinjector has a paradoxical effect on use.*

PATIENT EDUCATION IS AN ESSENTIAL COMPONENT OF TREATMENT THAT MAY IMPROVE ADHERENCE AND OUTCOMES (TABLE 3)

Dr Bennett: With anaphylaxis in particular, I educate the patients on what anaphylaxis means, what they will experience in the event of an anaphylactic reaction, and what they must do in that event. I also ask them to repeat back to

me what I have explained to them. At this point, I educate them on the epinephrine autoinjector, how to use it, and when to use it so that they are not anxious about it. This technique has worked. When the patients have a clear understanding of their condition and practice repeating the scenario of an anaphylactic reaction several times with me, they become prepared to handle an event when it happens. These patients apply what they have learned with confidence and with minimal hesitation. I find this technique to be more effective than providing them with a set of instructions. Using a form with written instructions may only give a false sense of security that the information is available and they will read it when they need it—which is hardly practical in the middle of an anaphylactic reaction.

Comment: *This routine makes sense and is called the teach-back technique. There are numerous studies on this technique.³⁴*

Dr Bennett: The biggest problem with the teach-back technique is that it is time consuming. In my experience, that is one of the areas where the PCMH movement is helpful because patients can have more exposure to teaching opportunities than in a typical clinical practice.

Dr Fromer: I agree with Dr Bennett about the time factor, especially for PCPs who typically give the patient only 18-23 seconds to describe his/her condition before interrupting and taking control of the discussion.^{35,36} However, communication with patients is essential. In the last 20 years, a great deal of research was conducted in the area of communication with patients, which used to be called “patient satisfaction” and is now called the “experience score.” It rates how people feel physically and emotionally about the care they are getting and how that care communicates what they need to do to be adherent.

Table 3 Engaging Patients in Their Own Preparedness and Therapy
Provide training to involve patients in learning about their sensitivity, how to avoid it, and how to follow the treatment plan
Promote behaviors that ensure immediate access to epinephrine autoinjectors for all at-risk individuals
Increase understanding of the consequences of anaphylaxis in the absence of immediate access to an epinephrine autoinjector
Request that patients bring their epinephrine autoinjectors with them to their follow-up office visits
Use a team-based approach, such that a team member can interact with insurance companies to handle insurance rejections
Action plans:
• Provide an anaphylaxis plan of action that is illustrative and written in an understandable form (ie, at a 4th-grade reading level)
• Provide the plan of action to patients, or in the case of children, to parents with copies provided for other caretakers and schools
• Evaluate the content of the written plan of action and determine whether parents/caretakers can read and understand it
Ensure that patients understand:
• The significance of their risk
• The possibility of a more serious reaction with subsequent exposure
• Relevant avoidance measures
• Early recognition of symptoms
• Appropriate treatment with an epinephrine autoinjector
Improve medication adherence through tailored self-management plans, one-on-one counseling sessions, or telephone follow-up. Follow-up discussions after a visit should include the following questions:
• Did you pick up your medicine?
• Do you have any questions about what we discussed regarding how to use the medicine and why you need it?
• Did you have any managed care insurance problems?
• Are you experiencing any side effects from your medicine?

A recent study evaluated the effects on adherence of pictorial images and counseling tools, which were developed to specifically communicate the importance of consistent dose timing and the concept of drug resistance to antiretroviral therapy.³⁷ The study found that patients in the intervention group experienced a 12.4% increase in adherence, compared with a 1.8% decrease in patients receiving the standard of care. Eighty percent of patients in the intervention group felt that counseling was either mostly or very helpful to their adherence, and 80% thought that this type of counseling could help them with other health issues. A patient-centered model of team-based care must be established in the clinical practice to achieve adherence rates >90%. In this model, each team member plays a specific role, all team members participate in patient education, and the clinical practice has tools to assist with patient health literacy.³⁸ Using health literacy assessment tools will help clinicians target the message appropriately.

Dr Bennett: Health literacy is often poor. In many instances, my patients bring questions regarding the medications they have been prescribed and instructed to take by another HCP (eg, a specialist). These patients state that few clinicians explain or discuss their medical problems with them.

Ms Hayden: When educating a patient/family about anaphylaxis, it is important to assess their knowledge, fears, and perceived obstacles to taking action. Because patients have differing learning styles, I find it essential to discuss and demonstrate use of the epinephrine autoinjector and action plan and then have the patient/family perform a return demonstration. Also, it is helpful to discuss a hypothetical situation that would include signs and symptoms of anaphylaxis and appropriate action to treat it. In cases where the patient might not see or use an epinephrine autoinjector trainer (ie, in an office without samples), I involve the pharmacist by writing on the prescription "review technique with patient." In my current practice, we do not see sales representatives and, consequently, do not have samples or trainers with which to demonstrate the technique to the patient.

Dr Fromer: In our network, we create a care team for many chronic disease states. NPs or physician assistants (PAs) are part of the care team and do an excellent job in educating the patients. Adding an NP or PA to the team can change the clinical experience for both the patient and the physician.

Ms Hayden: Most NPs and PAs are not under the same pressure as physicians to maximize patients seen each day. My schedule has been created to give me more face time with patients and caregivers to discuss their concerns and review the autoinjector technique with them. I believe the PCMH movement, in which various members of the team use their strengths to ensure that patients receive and can apply the information that they need, is the way to achieve optimal care.

Dr Bennett: The term "physician extender," which is often used for NPs and PAs, is an interesting term and one

that can be understood in different ways. It might be interpreted as someone who steps in at the end of the visit and takes over from there to educate the patients. Alternatively, in my practice, "physician extender" means another practitioner who sees his/her own patients and is under the same pressure as I am to see patients. I can see that this is not the philosophy in the PCMH model.

Dr Fromer: As mentioned earlier, studies found that clinicians interrupt patients 18-23 seconds after the opening question, "What brings you to the office (or clinic)?" or "What seems to be the problem?"^{35,36} On average, patients had 26.2 seconds to address their concern.³⁵ Whereas if left alone, most patients complete their statements in <60 seconds and no longer than 150 seconds.³⁶

Treatment guidelines for the management of anaphylaxis are available from the NIAID as well as the Joint Task Force on Practice Parameters, representing the American Academy of Allergy, Asthma & Immunology; the American College of Allergy, Asthma & Immunology; and the Joint Council of Allergy, Asthma and Immunology. Recommendations include: 1) allergen avoidance, 2) early recognition of signs and symptoms of anaphylaxis, 3) epinephrine autoinjector administration, 4) teaching patients about allergy medications and how to use them, and 5) giving patients an emergency action plan.^{39,40} However, all of that may not always happen in clinical practice. Educational videos in the waiting room may help instruct patients and caregivers.

Medical organizations such as the ACP and the American Academy of Family Practitioners (AAFP) are interested in facilitating the provision of readily available educational tools that clinicians can give to their patients to raise health literacy before patients leave the office. Another tool is teaching patients leaving the ED after an anaphylactic reaction what actions and steps they will need to take at home in the next 48 hours.

Dr Bennett: Educational tools can improve almost everything in clinical practice, especially managing patients with multiple chronic diseases, to which we currently allocate approximately 15 minutes every 3 months in my practice. Additionally, employers do not always support patients' seeing their doctor as frequently as may be needed for good health care. This is a dilemma for patients and clinicians alike.

Dr Fromer: We provide a written action plan and utilize all the tools available to us. We also individualize the FAAN food allergy action plan⁴¹ to meet each patient's specific needs. Often, hospitals are not set up to communicate between the ED and PCPs or to adopt a team-based care approach. Notification of the PCP may be in the form of a written report, sent by "snail" mail alone weeks after the patient had an anaphylactic reaction, if any communication is sent at all. However, in a team-based model, if the hospital is in the home network, the ED staff can fill out a form and fax it to the PCP's office explaining what the PCP needs to do when he/she sees the patient in 48 hours. After this time, if the patient does not come to the office, one of the

team members can call and ask about why the patient did not come for the follow-up visit. The answer to these problems and others is in "Primary Care Advanced Access," a practice scheduling model that builds in time for same-day appointments, reducing a patient's wait time and increasing patient satisfaction.^{42,43} HCPs have found it useful because it eliminates the dilemma of dealing with emergency patients when the schedule is already full. This is an important part of the PCMH model.

WHO IN YOUR OFFICE CONDUCTS PATIENT EDUCATION?

Dr Bennett: I conduct all the patient education myself.

Dr Fromer: I do, along with the whole team. Our strong belief is that everyone should be involved in patient education, working up to the level of their license, and to this end we cross-train our office staff. Medical assistants can do much more than only taking vital signs all day.

Ms Hayden: I and my nursing team provide patient/family education. One study recommended that hospitals introduce a separate nursing function that is patient-centered, rather than just care-centered, to provide more personal attention and education for patients during their hospital stay and after their release.⁴⁴ Hopefully, all HCPs, from medical assistants through physician staff, are prepared to provide evidence-based and individualized education to the level of their expertise and licensure.

Dr Fromer: Practices in many states have converted to the team-based model with positive results, including improved provider satisfaction.⁴⁵

Dr Bennett: Does your office participate in a PCMH initiative? My practice does not participate in this model.

Dr Fromer: Our network uses the AAFP TransforMED PCMH model. We coordinate patients' needs among the team members, manage the transition from the ED to outpatient practice, and include the pharmacy in the patient-care team.

CONCLUSIONS

Despite the differences in their practice locations, their specific responsibilities, and the characteristics of their patient populations, the 3 community medicine participants in this discussion shared a lot of common ground in their clinical approach to anaphylaxis. They agreed that effective management of anaphylaxis includes preventive measures as well as appropriate treatment. The challenges of providing care for patients at risk for anaphylaxis, including those who have never had a reaction and those who have experienced anaphylaxis in the past, include cost, the variable lengths of time between episodes, and the need for patient vigilance in both trigger avoidance and preparation for a possible anaphylactic reaction. For the patient, this means consistently having immediate access to epinephrine in the appropriate dose. The participants agree that thorough patient education and a team approach to patient

management are likely to be the most effective strategies for addressing these issues from a primary care perspective.

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