

EPILEPSY EMERGENCIES AND CURRENT RESCUE MEDICATIONS (WEBINAR TRANSCRIPT)

- Laura Lubbers: [00:00](#) Welcome everyone to today's webinar. I'm Laura Lubbers and I'm the Chief Scientific Officer for Citizens United for Research in Epilepsy or CURE. I'm delighted to have you with joining us today. Today's webinar is entitled Seizure Emergencies and Current Rescue Medications and it will be presented by Dr. Kamil Detyniecki. This is the first installment of a two part webinar series that will describe seizure emergencies and review available rescue medications and touch on those that are in development.
- Laura Lubbers: [00:32](#) It will also review when and how rescue medications should be administered. Today's webinar is being sponsored by our friends at the BAND Foundation. CURE's mission is to find a cure for epilepsy by promoting and funding patient focused research. CURE's robust grants portfolio, has advanced epilepsy research across areas such as infantile spasms, post-traumatic epilepsy, sudden unexpected death in epilepsy or SUDEP, and epilepsy genetics.
- Laura Lubbers: [01:04](#) Dr. Detyniecki is an assistant professor of clinical neurology at the University of Miami, Miller School of Medicine and an attending epileptologist at the University of Miami hospital and clinics and Jackson Memorial Hospital. He's the director of the clinical trials research program in epilepsy at the University of Miami. And he is the principal investigator of several clinical research studies.
- Laura Lubbers: [01:29](#) Dr. Detyniecki is duly board certified in neurology and epilepsy by the American Board of Psychiatry and Neurology. Before, Dr. Detyniecki begins. I'd like to encourage everyone to ask questions. You may submit your questions anytime during the presentation by typing them into the Q&A tab located at the bottom of your Zoom panel and clicking send.
- Laura Lubbers: [01:56](#) My colleague from CURE, Brandon Laughlin. We're read them aloud during the Q&A portion of the webinar. We do want this webinar to be as interactive and informative as possible. However, to respect everyone's privacy, we ask that you make

your questions general and not specific to a loved one's epilepsy.

- Laura Lubbers: [02:15](#) I also want to mention that today's webinar, as well as all previous and future webinars will be recorded and are available on the CURE website. I'll now turn it over to Dr. Detyniecki. Welcome.
- Dr. Detyniecki: [02:30](#) Hello everyone. My name is Kamil Detyniecki. I'm happy to be here and talk about this important topic, which are epilepsy emergencies. Before I begin, here are my disclosures. I receive research support from Yale University for several investigator-initiated studies from these companies, Eisai, Sunovion, Acorda and Upsher Smith. And I also receive honoraria from UCB for an Advisory Board.
- Dr. Detyniecki: [03:04](#) So the key objective of this webinar today is to understand the definition of epilepsy emergencies and the importance of treatment. Then I will talk about the current rescue medications options and why an individualized plan is needed.
- Dr. Detyniecki: [03:27](#) So we'll focus on two epilepsy emergencies and one is seizure clusters or also called acute repetitive seizures, and the next one is status epilepticus. So what are seizure clusters? Basically there is not a good definition for seizure clusters, but the patients who have it, they all know what that is.
- Dr. Detyniecki: [03:50](#) And basically it's a closed group series of seizures that are distinct from the baseline seizure frequency or seizure pattern. And you can see different names being used for seizure clusters such as acute repetitive seizures, cluster seizures, serial seizures, crescendo, flurry, bouts of increased seizure activity. They all mean the same.
- Dr. Detyniecki: [04:14](#) There are definitions mostly are based on on time. So the most commonly used are greater or equal to two to three seizures in six or in 24 hours. And it can be seizures of any type. And they are most commonly seen in patients who have medically refractory or intractable epilepsy. And that can happen in any type of epilepsy patients.

- Dr. Detyniecki: [04:42](#) It's important to know about this phenomenon because they have the potential of progressing into something called status epilepticus. It's another emergency that can cause a permanent brain damage and can have consequences in the long term.
- Dr. Detyniecki: [05:06](#) So status epilepticus on the other hand it has two definitions for many years, call it the old definition, which was a greater than 30 minutes of continuous convulsive activity, which is really long time to have a, what people used to call the grand mal seizure, convulsive seizure for greater than 30 minutes, or having two or more seizures where the patient does not recover fully within between the seizures.
- Dr. Detyniecki: [05:38](#) And now there is a more newer definition, and we believe it's more practical, which we reduce the time of greater than five minutes of continuous convulsive activity or more than two seizures without full recovery between them. And the purpose of treatment with rescue medications are number one, can be used to stop ongoing seizure cluster.
- Dr. Detyniecki: [06:06](#) So patient has a pattern of clusters and has serious of seizures that come in a group and you use a rescue medication to prevent having more seizures in the cluster to shorten the duration of the cluster. They are rescue medications used to stop an ongoing seizure. So for example, someone has a very long seizure lasting for several minutes and you use medication to shorten that duration.
- Dr. Detyniecki: [06:34](#) And can also be used as prevention, if there is a patient in the situation that it has a high risk of having a seizure. And for example, missing medication, being sick. Some patients may use a rescue medication to prevent a seizure in the short term.
- Dr. Detyniecki: [06:53](#) So what are these rescue medications? So, these are anti-epileptic drugs that are used to stop seizures quickly to prevent emergency situations. They are designed to be absorbed quickly by the body and start working in the brain as fast as possible. They're not taken every day. They're taken as needed only in

emergency situations and they do not replace your daily anti-epileptic drugs.

Dr. Detyniecki: [07:22](#)

When should we use rescue medication? There's really not an answer for every patient and because every epilepsy patient is different, every seizure is different, so it's a decision that has to be individualized between the patient, the caregiver and the treating physician taking to account what's the baseline seizure frequency, what's the tolerance to the seizures and the consequences of the seizures and the effect of the rescue medication.

Dr. Detyniecki: [07:51](#)

Ideally, a patients should have a seizure action plan as shown here on the right side of the screen where patient has a description of the seizures and the plan of what to do in each situation. What these situations may be, could be seizure clusters. For example, the patient has X number of seizures. They should use the rescue medication or when the seizures are lasting longer than normal, or when they're more severe than normal or maybe a patient has the order of a warning that has enough time to use something to prevent the seizure from coming.

Dr. Detyniecki: [08:31](#)

Why should we bother? Why we should treat seizure emergencies? Because with these emergencies, there's a higher risk of going to the hospital to being admitted or going to the emergency room. There's a risk of injury, loss of work, or study and being associated with lower quality of life and possible even high mortality.

Dr. Detyniecki: [08:54](#)

Status epilepticus, which may be a complication of clusters if they left untreated, can lead to longterm consequences and increased mortality. And there's many studies has shown that the sooner we act, the sooner we treat these emergencies, the better the outcome.

Dr. Detyniecki: [09:14](#)

Here's an example of a patient that had a prolonged episode of status epilepticus, prolonged seizure that was not stopping on its own, and you can see the changes on the MRI during this emergency. You can see on the part of the brain that it's bright is when the seizures were occurring, and six months later there's shrinkage of that part of the brain showing that there

was some permanent damage to the brain. That's why it's so important to prevent those situations.

- Dr. Detyniecki: [09:47](#) Ideally, the treatment of a seizure emergency should start outside of the hospital even before the paramedics arrived and before you're in the emergency room. There was a large study showing that patients that were treated before being admitted to the hospital, patients with status epilepticus with this class of medications called benzodiazepines had better outcomes than patients that were treated with placebo, which meant not the drug.
- Dr. Detyniecki: [10:16](#) And showed here you may be all familiar with slogans used for stroke and showing that time is brain. I think this is as important for seizures because the longer the seizure progress, the more chance of losing neurons and having consequences.
- Dr. Detyniecki: [10:41](#) Luckily we have more treatment options that we had until recently, for many years the only option FDA approved for treating cluster of seizures and epilepsy emergencies as being Diazepam rectal gel. They may be familiar with the brand name Diastat, and as of a few months ago there's a new medication that's approved that it's a nasal spray. It's another medication called Midazolam which is in a class of Benzodiazepines that is not yet commercially available but it should be soon and may be a good alternative for patients that may not want to use the rectal route of administration.
- Dr. Detyniecki: [11:25](#) There are many medications that patients have been using what we call off label, which means it's not FDA approved for that indication, but we know they work and they are medications such as Clonazepam, Diazepam, Lorazepam, Midazolam. Those are all the same class of medications, Benzodiazepines patients are using in different routes orally, vocally in the cheek and as well as some medications that are being used in the nasal spray.
- Dr. Detyniecki: [11:58](#) Some physicians direct patients to take another dose of the medication when they are having an emergency, and many patients don't do anything, they wait for the seizures to stop. And that may be the

option for some patients. But it's important to discuss all the options with your neurologists.

- Dr. Detyniecki: [12:21](#) So the Diazepam rectal gel, it's approved for patients two years of age and older. And the benefits are that it works fast, that there are some generic forms available and we have a long experience with the medication. So we know what to expect. The drawbacks really is the route of administration. And so there is a loss of dignity and the loss of privacy and it's problematic to administering in public places in schools.
- Dr. Detyniecki: [12:55](#) So because of that it's really used mostly in children or patients who are institutionalized. But many active adults are reluctant to use it for obvious reasons. So in that case we have a different option which is now the Midazolam nasal spray that was recently approved by the FDA and under the name of Nayzilam.
- Dr. Detyniecki: [13:22](#) The benefits of this medication is that also works fast as similar to the Diazepam rectal gel, but it's less invasive and patients potentially can self administer. The drawbacks are that they may cause some nasal irritation and patients when they're having a cold or nasal drainage. We don't know well how this would affect the absorption of this medication.
- Dr. Detyniecki: [13:50](#) I wanted to know that a lot of patients are being using the IV formulation of Midazolam nasally, and you may be instructed by your neurologist and get instructions of how to use that. It is an option until the FDA approve nasal Midazolam gets into the pharmacies and the patients use this IV formulation into a syringe with atomizer or they can be put in the metered dose nasal sprayer.
- Dr. Detyniecki: [14:31](#) So we talk about this class of medications called the Benzodiazepines again, Diazepam, Midozalam, or the medications end with an M at the end, those are medications that have potential side effects of sedation and sleepiness in patients. After they use it, they may feel tired and sleepy.
- Dr. Detyniecki: [14:50](#) There is a potential for respiratory distress, particularly patients who have pulmonary disease or breathing problems or are very sick and there is also potential of

abuse in this class of medications and the potential of tolerance, which means if you use the medications regularly there is a potential that your body gets used to them and doesn't work as well.

Dr. Detyniecki: [15:19](#)

So I wanted to discuss a few cases where patients are using rescue medication as an example. So we have the patient Sara, who's 24 years old. She has a cluster of eight or more myoclonic seizures which are brief jerks. They usually occur in the morning and they happen more around her menstrual period. She knows that if she has two or more seizures she will have several that day so she uses intranasal Midazolam to prevent having more seizures that day.

Dr. Detyniecki: [15:54](#)

Richard is a eight year old boy with convulsive seizures, the so-called grand mal seizures, and they can be very prolonged if he's sick with fever, and may last up to 20 minutes, and usually the mom calls the ambulance and the boy is taken to the hospital. But mom started using rectal diazepam if she noticed that the seizures lasting more than five minutes and that has really shorten the duration of his seizures and avoids him going to the ER each time that this happens.

Dr. Detyniecki: [16:34](#)

Another example is Jessica, who's 38 years old. She has seizures only at night, and if she's very stressed and doesn't sleep well, she may have auras of feeling strange during the day. And she usually has a seizure that night. So she takes a Lorazepam if that situation happens where she has the auras and she uses that to prevent having a seizure at night.

Dr. Detyniecki: [17:04](#)

I don't want to take more time off the questions and the questions are very important. I see here questions.

Laura Lubbers: [17:16](#)

So yes, we do have questions. I know some have already come in. If you have other questions, if there are other questions from our audience, please do connect them through the Q&A tab located at the bottom of your screen and click send, and Brandon will go ahead and read them aloud.

Dr. Detyniecki: [17:34](#)

Okay, so I'll read the question. From CT mum. I have a teenager with a seizure disorder. He takes medications to control them on a daily basis. If he

were to have a seizure anyway longer than three minutes out. Seizure action plan is to administer the Diastat we have used. Well, I'm not sure what's the question here, but I think it's a great idea, and I think, you showing an example here of an appropriate use of a rescue medication trying to prevent a prolonged seizure from happening.

Dr. Detyniecki: [18:26](#)

I have another question here. Are these medications combined with other treatments or solo treatments? That's an excellent question. These medications are not supposed to replace the daily anti-epileptic medications that you take. These are only to be used in situations of emergencies. So, yeah, they are combined. You continue taking your daily medications and this is extra in case of a situation that requires treatment.

Brandon Laughlin: [19:04](#)

Also to help you out. Kamil, I got a couple of questions that came in through email as well. And these actually are dealing with some of the differences between rescue medications. Are there differences in effectiveness between the different delivery methods of rescue medications such as buccal or nasal or...

Dr. Detyniecki: [19:36](#)

So the important is that these medications get to the system as fast as possible, and there are not good studies comparing one to another because it's very hard to make a study like that, that is unbiased and blinded. Normally we want to do a study that is blinded that you don't know which medication you're taking, whether it's placebo or not. So there's no good studies comparing them. But there've been some comparing with the rectal diazepam, with nasal midazolam and they seem to be compatible. So we don't have evidence that one is better than the other. There's just a, at this point preference on the route of administration.

Brandon Laughlin: [20:25](#)

Great. Thank you. And the other question that goes along with that. You mentioned quickly about the side effects of some of the rescue medications. Are there any differences between those side effects depending on the type of delivery method that you use?

- Dr. Detyniecki: [20:51](#) Yes, absolutely. So as I mentioned, the nasal administration has the potential for irritation in the nose, and so that's one type of side effect. And also theoretically, that medications have different half lives, which means they may stay in your system longer. So for example, diazepam has a longer, stays in your system longer.
- Dr. Detyniecki: [21:18](#) So potentially you may feel the effect of sedation for a longer time than for example, midazolam that is a shorter time, but in some patients that may be as also be beneficial because there's maybe longer protection for the seizures. So each may be better for one patient then versus others.
- Brandon Laughlin: [21:44](#) Great. Thank you. Actually a question that came in before even the webinars started was dealing with nasal rescue medications. And the question was, is the research suggesting that these medications such as Nayzilam will be effective?
- Dr. Detyniecki: [22:05](#) The question is whether they're effective. Yeah, absolutely. For the nasal midazolam, there was a large study that it was a multicenter study where they compare this medication with placebo, which the placebo means there's a dummy medication also that looks the same way as the real medication. And in fact, this study showed that the nasal midazolam was much more effective than using the dummy medication. That's what we use and that's what the FDA used to approve this medication.
- Brandon Laughlin: [22:47](#) Great. I took a question came in about this slide dealing with the definition of status epilepticus. And I'm not sure if the five minute mark will be reduced for pediatric patients to say two to three minutes for status epilepticus definition.
- Dr. Detyniecki: [23:11](#) Yeah. Definitions have this problem that they're never perfect and this is what we have right now. And I think that again, in terms of when to treat, it's different. So you may have a definition saying that status epilepticus is five minutes, but this doesn't mean that we need to wait five minutes in order to start treatment.

- Dr. Detyniecki: [23:36](#) And that is what has been shown based on animal and human data that if a seizure goes for five minutes or longer, there's a less likelihood that it will stop on its own. But I think that absolutely there for some patients, if a seizure is one, two minutes long, it may be too long for them. So every patient is different, but not aware of any that we're changing that definition.
- Brandon Laughlin: [24:09](#) Wonderful. And we're getting a lot of good questions are coming in here. One of the questions actually talks a little bit more about seizure action plans, and the attendee would like to know, what would you say to say school teachers or school personnel who refuse to administer a rectal medications?
- Dr. Detyniecki: [24:33](#) Yeah, there's been a lot of debate about that in having the school administer those medications. And I think that the problem with the rectal administration maybe resolved now that we have nasal because again, rectal is troublesome in patients' privacy. But now that we have the option of nasal, hopefully that won't be a problem.
- Brandon Laughlin: [25:10](#) Great. Thank you. Actually another question came in specifically about Diastat, and they want to know if Diastat can be given twice at one time if the seizures persist after the first dose or do you have to wait a certain period of time between doses?
- Dr. Detyniecki: [25:31](#) Yeah, so typically the dose is calculated by weight. There is a possibility of giving another dose, but I would normally wait, at least more than 10 minutes before the dose is to know if the first dose took an effect, and we have to always assess whether the patient is not overly sedated, is not having any difficulty breathing. But those discussions about the dose need to be specific addressed with with the neurologist. I can't give you an answer for everyone.
- Dr. Detyniecki: [26:16](#) But to answer shortly. Yes. In some patients we can.
- Brandon Laughlin: [26:20](#) Thank you. Great, thank you. Is there an average length of how long it takes for a rescue medication to take effect?
- Dr. Detyniecki: [26:37](#) Yes. And really it depends on the type of rescue medications. The oral medications they take much

longer. And that's why we're so excited to have different routes of administration because if you swallow a pill, you may take 20 minutes or more to start working, which in the case of, for example, a convulsion going on for a long time, it's unacceptable.

Dr. Detyniecki: [27:05](#)

Nasal may work as fast as 10 minutes, and there are new medications that are being searched in and are being researched that may work even faster as fast as IV. So there's different times depending on the type on the medication and the route of administration. But the fastest that we have right now are the rectal and the nasal.

Brandon Laughlin: [27:39](#)

Another question that came in mainly actually deals with the forms, Versed and Nayzilam.

Dr. Detyniecki: [27:49](#)

Sorry, you broke. And when you said, you said the difference between Versed and Nayzilam?

Brandon Laughlin: [27:55](#)

Yeah. They wanted to know what the differences between the two.

Dr. Detyniecki: [27:57](#)

Yeah, so the active compound is the same. So Versed is the brand name of Midazolam, which is the same compound that is in this brand name Nayzilam. The main difference is that when you use the off label midazolam, like I showed this picture of this young kid getting the Versed with a syringe or a spray. Is that because we're using a product that is being developed for IV, it's very diluted. So you need to use much more volume or much more amount of liquid that it actually doesn't all get absorbed in the drips behind the nose, so it's not ideal.

Dr. Detyniecki: [28:43](#)

This product that was FDA approved, Nayzilam is a much smaller concentration, so it's just one dose, and so that is an improvement compared to the off label, but the actual medication that is being used is the same.

Brandon Laughlin: [28:06](#)

Wonderful. If you can use the nasal spray to stop a seizure and it's not effective, can you actually switch rescue medications and then give Diastat, is that possible?

- Dr. Detyniecki: [29:23](#) These are great questions that need to be addressed and that's why it's important to have a rescue plan. Every rescue plan needs to have an option. Well, what if the rescue medication doesn't work? When is the moment that can you use another dose, should you call 911, again, this is not an answer for everyone, and it really depends on the age of the patient and the dose that is be given.
- Dr. Detyniecki: [29:50](#) So using different types of rescue medication at the same time. It's possible. It's unusual. Usually, we try to use, there are rescue medications that you can repeat after, let's say five or 10 minutes, you can give another dose of the same one using a different one. It's not that commonly used but it's possible. But this is something that should be discussed and patients should ask that of their neurologist.
- Dr. Detyniecki: [30:21](#) I think it's again important to have a rescue plan where we discuss this situations, what to do with one medication doesn't work. Can I use a second dose, when should I call 911? And so on.
- Brandon Laughlin: [30:39](#) Absolutely. For sure. A great recommendation. Another question that came in. If a patient is already on a benzo, such as Onfi as part of their daily AED regime, are the rescue meds going to be more or less effective?
- Dr. Detyniecki: [30:57](#) Yeah, that's an excellent question. So the good answer is, it's possible. There's a phenomenon of tolerance to benzodiazepines. And so if a patient is on Onfi or clobazam, which is a benzodiazepine it takes every day, it's possible that they may require a higher dose of rescue medication than a person who is not used to take benzodiazepines.
- Dr. Detyniecki: [31:23](#) And this is something that it's going to need more research for the newer medications, and for the new medication Nayzilam, the patients that were in the study were not allowed to be on those medications. And so we're going to need to have more information about it. It's definitely not a contraindication, but it may be that the patients may notice that they may require a higher dose.

- Brandon Laughlin: [31:53](#) Great answer. Thank you. A question came in also going back to seizure action plans. Are there resources made available yet for say, school personnel or other professionals on how to use rescue medications? Are there any resources that exist out there that you know of?
- Dr. Detyniecki: [32:20](#) Yeah, I think that the epilepsy foundation, it's a great resource and they have examples of rescue medication plan and so I think that's one great source of information.
- Brandon Laughlin: [32:39](#) Great. A question came in. Again, going back to delivery methods which are going to be addressed in a future webinar, but are there sublingual rescue medications that would work more quickly than a pill such as a liquid lorazepam, will it work more quickly sublingually?
- Dr. Detyniecki: [33:02](#) Yes, people are using that. People are using the lorazepam or clonazepam buccally or sublingually. I think the exact absorption has not been studied as well. But there's a potential that it works faster than swallowing the pill. Although many of these pills are not meant to be used sublingually so they may not dissolve as fast, and for using sublingual, liquid formulation and so on, it's definitely an alternative.
- Dr. Detyniecki: [33:42](#) There are again, companies trying to develop a different products and I think we'll talk in the next seminar about it, but there are companies using, for example, a film that is using the cheek that delivers medications to get absorbed faster to the mucosa. So it's an active area of research looking for different routes of administration.
- Brandon Laughlin: [34:04](#) Great. Lots of questions coming in about the timing of how long people should wait. So one question came in, for a child who has had a history of refractory epilepticus, when would it be great or when would it be ideal to administer the rescue medications, and when to call 911? This person in particular is not comfortable waiting five minutes.
- Dr. Detyniecki: [34:34](#) Yeah. So the answer is right there. If you're not comfortable waiting five minutes, you shouldn't do that. There is not an answer for everyone. And that's

why going back to my presentation I mentioned that rescue medication, when to administer it should be a decision between the patient, caregiver, and the doctor depending on the user's seizures, what kind of seizures they have.

Dr. Detyniecki: [35:06](#)

For example, you may be willing to wait longer if you're having a focal motor seizure, which is a seizure where you have, for example, motor activity without loss of awareness, they can go on for several minutes without causing any significant harm to the patient, but a generalized convulsion, generalized tonic clonic seizure going on for four or five minutes, it can be potentially a concern.

Dr. Detyniecki: [35:32](#)

So I really cannot answer this question in this particular child without knowing his history and his previous and the type of seizures that he's had. But it's something that definitely, if the child had refractory status epilepticus they should have a rescue medication and they should talk to the neurologist about rescue planning and when to administer the medication, but I can't make a recommendation without knowing all the details.

Brandon Laughlin: [36:04](#)

Yes. And thank you Dr. Detyniecki. We have a couple of questions left, so if anybody has any additional questions, please go ahead and type them in now. One question came in again, dealing with delivery methods. Should individuals administering say Ativan for example, be concerned about putting a tablet in the mouth of somebody that's having a tonic-clonic seizure?

Dr. Detyniecki: [36:32](#)

Yeah, absolutely. It's probably not the best way to administer medication in this type of seizure. And when you're having a generalized tonic-clonic seizures, usually you need something that works fast. A pill may not get absorbed well. There's often a lot of secretions from the mouth, salivation, drooling that may prevent the medication getting absorbed.

Dr. Detyniecki: [36:54](#)

And also as the person mentions here they worry about getting injured. The person who delivers the medication because during a seizure, patients may clench their teeth involuntarily. So I would suggest using something different, either a rectal diazepam or

nasal midazolam probably will be a better way to administer medication or rather than the pills in that situation.

Brandon Laughlin: [37:20](#)

Great, thank you. Kind of a general question that came in, but actually came in many different forms. I know you discussed the differences between some of the benzos that are out there, but maybe you can give a quick review of what are some of the main differences between the rescue medications that are currently available to patients?

Dr. Detyniecki: [37:48](#)

Yeah, so the type of medication that we have available, we have the ones that are specifically FDA approved for rescue are the nasal midazolam that was recently approved. And we have the rectal diazepam. The difference are those are two different medications. You can call them cousins. They are the same family of medications, benzodiazepines, they are sedatives, but they work great at stopping seizures.

Dr. Detyniecki: [38:21](#)

The diazepam stays in your system for a longer time than the midazolam. They both work similarly fast. It gets absorbed fast. One is through the mucosa in the nose. The other one is rectally, but those are the two main differences. And then we have oral medications that people use that typically take much longer to work. We're talking about if you swallow a pill, probably in terms of 15, 20 minutes or more before it starts working.

Dr. Detyniecki: [38:56](#)

So if you need something to stop a seizure, probably rectal or nasal will be a best thing if you have a cluster that you have hours apart between seizures or it's a good alternative because you have enough time for a medication to get absorbed. So it really depends on the pattern and the type of seizures, and what are you trying to achieve. Are you trying to prevent something in the next few hours or are you trying to stop an ongoing seizure right now as soon as possible. Depending on that different medications maybe better choice.

Brandon Laughlin: [39:34](#)

Good. Thank you. Dr. Detyniecki. Actually, one final question that came in dealing with the research

behind rescue medications. Are there any studies on the efficacy of a VNS for rescue purposes?

Dr. Detyniecki: [39:52](#)

Yeah, that's a great question. There's not that much research on that. We know VNS, it works well at preventing seizures, but they are definitely a lot of anecdotal patients and I hear a lot of patients who are using the magnet to abort the seizures. So my answer to that is that if people notice that it works, they should use it. Definitely there is no drawback from that.

Dr. Detyniecki: [40:26](#)

And the side effects of using the magnet are minimal except some potential irritation to the throat during the VNS, and what the magnet does is it activates the VNS. The VNS normally senses current every few minutes, whether you're having a seizure or not, day or night. But if you're having a seizure, you're having an aura, the magnet usually delivers an extra current and often it's a higher current than what we use normally. So definitely that it has worked for some people. Yeah. But there is no large scale studies as we did with other rescue medications.

Brandon Laughlin: [41:14](#)

Great. Thank you so much. I'm going to go ahead and turn it back over to Laura now, and again. Thank you Dr. Detyniecki.

Dr. Detyniecki: [41:23](#)

Thank you.

Laura Lubbers: [41:23](#)

Well, this concludes our webinar about seizure emergencies and available rescue medications. I want to thank you, Dr. Detyniecki for such great advice and especially highlighting the need for seizure action plan. There's more information out there, but we do encourage people to build their seizure action plan in conjunction with their physician.

Laura Lubbers: [41:42](#)

I also want to thank the BAND Foundation for sponsoring today's webinar and the entire webinar series in 2019. And of course our awesome audience for asking so many wonderful questions. If you have additional questions about this topic or wish to learn more about any of CUREs research programs, please feel free to visit our website at www.cureepilepsy.org.

Laura Lubbers:

[42:08](#)

Finally, we hope you will join us for our future webinars, including the second installment of our CURE's rescue medication webinars series, which we'll continue to explore, rescue medication, delivery methods, and future therapies. And it will be presented by Dr. Nathan Fountain from the University of Virginia on September 10th. So with that, I would like to thank you all. Have a great day.