

Transcript:

Dr. Karen Becker Interviews Dr. Schultz (part 1 of 4)

Dr. Becker: Hi, this is Dr. Karen Becker, and today I have a very special guest. My guest, Dr. Ronald Schultz, is here with us. Actually, I'm at his facility at the University of Wisconsin – Madison School of Veterinary Medicine. Dr. Schultz heads the Pathobiological Sciences Department. Thank you so much for joining us.

Dr. Schultz: Thank you for coming.

Dr. Becker: It's a cold day here in Wisconsin. Dr. Schultz, prior to the interview, is telling me about how when he arrived here 29 years ago. I call him an immunologist, and veterinary immunology is really where his specialty is in terms of focus for education and research. But he came here as the first pathobiological sciences person. Tell me a little bit about your department.

Dr. Schultz: We now have about 150 faculty staff and students in the department. It's the largest of the four departments here in this school. We have responsibility over a variety of subjects, including bacteriology, immunology, virology, parasitology, public health, epidemiology, and clinical and anatomic pathology. It is a big group, and an important group within any veterinary school.

Dr. Becker: It is. Part of the reason that I was excited about having Dr. Schultz join us today is that if you begin thinking about vaccine decisions for your pets, you will absolutely come across not only Dr. Schultz's information. He's involved in about every aspect of the vaccine topic, from working with vaccine manufacturers, putting together protocols, testing protocols. He's the man that's actually in the lab during the research, which makes it an honor to have you here with us.

Dr. Schultz: Thank you.

Developing a Vaccine Protocol

Dr. Becker: In light of all of that information, many of you on the Healthy Pets website have questioned me about what to do with vaccines, probably one of the most hotly debated topics in veterinary medicine. Part of the reason it's so hotly debated is we, of course, want to be able to provide protection to our pets. But there's a big difference between providing protection in terms of giving them immunologic protection against life-threatening diseases and

overvaccination. And there's probably no one in the world more well-versed in this discussion than you.

My first question is this: I'm actually going to have you talk about the fact that when people first acquire a pet, many are not able to correlate it with the fact that we, as people, don't go every year for measles-mumps-rubella-DPT. We're vaccinated as kids, and then we have protection for life. When owners acquire their first dog or kitten and we bring him to the veterinarian, many veterinarians will say, "We want to give your pet a series of 'puppy shots,' which are not necessarily any different from adult shots. We want to give them maybe two to four weeks."

When I was working at the Humane Society, our protocol was giving a puppy a five-way combination vaccine at six, eight, 10, 12, 14, and 16 weeks and an annual booster forever until they die. That was 20 years ago. At that time, that was considered a good idea to help provide optimal protection. When I went to vet school and learned that vaccines never wear off, I was a little confused about some of those recommendations coming from veterinarians. Can you expound a little bit not only on how dogs and cats develop immunity, but where you've seen the vaccine issue in your career – how you've seen things change?

Dr. Schultz: Some of those questions were the questions that I asked back in the 70s -- how often do we need to vaccinate dogs and cats, and what vaccines are actually required. In those days, there were not a lot of vaccines. So every time we got a new vaccine, we added it to the syringe. But by the 80s, we had all 12, 14 different vaccines that were part of combination products. From an immunologic standpoint, I knew that was not good. Also from the standpoint of animals developing adverse reactions, the animals knew that that wasn't good.

So back in the 70s, this was something that was not thought about very much. A colleague of mine, Dr. Fred Scott, and I in 1978 came out with a vaccination protocol where we were suggesting that after the puppy or kitten shots, the animal be vaccinated again at a year, but every three years or less frequently afterwards. This was in 1978 that we actually published that information. Of course, it takes a long time for change to occur. It was actually in 1998 that the American Association of Feline Practitioners came out with guidelines that were very much like what we had published 20 years earlier.

Of course, we have a lot more vaccines today than we did then, but we know that there are certain vaccines that every dog or every cat should receive. We called those the core vaccines. For dogs, those happen to be canine distemper, canine parvo virus, and canine adeno virus. For cats, it's feline panleukopenia (which is often referred to as distemper, but it's the feline parvo virus, which is the ancestral virus for canine parvo), feline calici, and feline herpes virus. For both species, we have these core rabies vaccines. Those core vaccines are vaccines that every

cat or kitten and puppy should receive. The diseases can be very severe, and mortality from those particular infections can be as high as 60, 70, 80 percent in young animals.

Now, the remaining vaccines, which there are many of for both dogs and cats, we refer to as non-core or optional. That's where we are right now with regard to the vaccines, and which ones every animal should receive versus which ones only certain animals should receive – core versus non-core.

Dr. Becker: What are your thoughts in terms of indoor house cat vaccines, where, in theory, you have an educated owner that is not going to be introducing outdoor feral kitties into that confined environment? What are your thoughts on indoor house cat vaccines in terms of recurrent vaccination requirements?

Dr. Schultz: I suggest the core vaccine -- the panleukopenia. If you want to look at it at a minimalistic way, every cat must get panleukopenia as a kitten. The last dose of those kitten shots be at 14 to 16 weeks. The reason for that is depending on the antibody that the mom has. That antibody is actually passed on to the kitten or puppy, and it becomes systemic. It will have a finite life, though, because it is passive and about every two weeks, it will decay. But depending on how high it is in the queen or bitch -- that will determine which one of those puppy or kitten vaccinations actually immunize.

Vaccination vs. Immunization

Dr. Becker: And you might want to mention that there's a difference between being vaccinated and being immunized.

Dr. Schultz: Absolutely. We do a lot vaccinating, and sometimes don't do much immunizing, especially in the puppy and kitten, because that maternally-derived antibody can actually block the vaccine from working. It's one of the reasons we give multiple vaccines. In the old days -- back in the 60s and 70s when vaccines first came out -- what we actually used to do for puppies at that time is to establish a nomograph. Not very many people know about the nomograph, but it was based on the antibody titer of the mother. We could then determine based on half-life exactly when the puppy or kitten needed to be immunized.

Titering Maternal Antibodies

Dr. Becker: It's funny that you say that you determined this long ago. People that come to my practice at Natural Pet -- I have a lot of proactive, really excellent wellness readers -- many of them coming in or knew people that are interested in potentially breeding the pet responsibly, ethically, and proactively -- will say, "Do you know about Dr. Schultz's new titering protocol?" It's actually very old.

Dr. Schultz: Yes, very old.

Dr. Becker: It's fabulous. What he's done, which has been excellent at avoiding unnecessary puppy vaccines and making sure that your vaccinating when the body's able to receive vaccine and produce antibody, is he can check the bitch's blood and determine the exact day that maternal antibody is going wane from the puppy's system. The whole principle of vaccines is that after puppies or kittens nurse from their momma, they get a set of antibodies. Those maternal antibodies will last them... We can look at a puppy or kitten and see, but we know it will last them anywhere from five and a half and nine weeks-ish.

Dr. Schultz: Right.

Dr. Becker: And the whole principle of vaccine is they nurse from mom, they get this gift of immune system, and then as those maternal antibodies are off, there's a period of time before the pet's own immune system takes off, and there's this window of opportunity where if they're exposed to viruses, it will kill them. So the whole principle of vaccine is that we want to provide to them a stimulus to be able to make an antibody. So if this infectious disease is encountered, they're able to effectively make an immune response and not die from it.

But here's what's great: you can actually titer the bitch, to know the exact date that the maternal antibody's going to wear off in that puppy. And so you're not giving any unnecessary vaccine; you're providing the correct vaccine at the appropriate time when the puppy's immune system can mount an immune reaction, which is fabulous. So I think it's funny that in my generation of veterinarians, it's very hip and trendy to do this. And yet you were doing it "old school."

Dr. Schultz: Yeah, they were doing it even before I got involved in immunology. One of the reasons that they stopped doing it was that it took a fair amount of time to get the results back – you have to bleed the animal, send a sample off. The other thing that really was found is that it varied for each of the different vaccines. You might be able to find that the puppies could respond to distemper at eight weeks, but when you look at parvo, he couldn't respond to parvo for 12 to 14 weeks. So then it was decided that a series of vaccinations would probably be the way to go. It's less expensive – so expense came in, and today titers are really expensive. It's faster, because you didn't have to wait for those results.

Transcript:

Dr. Karen Becker Interviews Dr. Schultz (part 2 of 4)

Dr. Schultz: And so what we suggest today is not starting your vaccination program before six to eight weeks of the age of either the puppy or kitten. And then, do not revaccinate more often than every two weeks, so it would be between two and four weeks. If you started your program at eight weeks, you would give another dose of the core vaccine at 12 weeks, and the third dose at 16 weeks. That would be your vaccination program.

Dr. Becker: What I do at Natural Pet, we get a vaccine before 12 weeks of age, so at nine to 10 weeks, and then we boost again between 15 and 16 weeks of age. We titer two weeks after that last vaccine to see if there's been a response. You might want to be able to explain that. Although rarely, there can be what's called a non-response. May you can explain what that means.

Dr. Schultz: What we want to do is that we want to make sure that the vaccination program has actually induced an immune response. The best way to look for that immune response is to do an antibody titer for distemper and parvo in the dog, or panleukopenia, which is the feline parvo virus. They would be the three things that I recommend doing titers for. You need to wait at least two to four weeks after the last dose, which in the series should be somewhere between 14 and 16 weeks.

At that time, the maternally-derived antibody has dropped off, so we don't have to worry about having antibody left from mom in the puppy. If there's antibody there, we know that the puppy or kitten has responded. They not only have been vaccinated, but they've actually been immunized.

Dr. Becker: That's the key. You can put a lot of vaccines into animals, and if the animal didn't have a functional immunologic response, it's all for none. They get all of the toxicity and none of the benefit. The reasons that we vaccinate is to help provide some protective immunity against these life-threatening diseases that dogs and cats are exposed to.

On Vaccine Non-Responders

Dr. Schultz: One of the questions you did ask is about the non-responder. Unfortunately, there are genetic non-responders, which means that they won't respond regardless of whether you gave the vaccine at an appropriate time or not. I estimate these non-responders in terms of

puppies and their ability to respond to canine parvo virus at about one in a thousand puppies in the general population. But because of this genetic, certain breeds and, most importantly, certain families of dogs will have much higher than one in a thousand. It might be one in a hundred. Or one in 10. Similarly for distemper, the animal can be a non-responder.

The animals that are non-responders to parvo respond beautifully to distemper. The ones that are non-responder for distemper respond beautifully to parvo. It is very strictly defined to that specific vaccine or specific disease.

Unlike the parvo where we have one in a thousand in the population, we have fewer for distemper – about one in five thousand. Probably because distemper has been in the canine species for hundreds, if not thousands, of years, whereas parvo just came in to the canine species in 1978.

Core Vaccines and the Potential for Lifelong Immunity

Dr. Becker: So after we've established protective immunity. I call it a modified vaccine protocol, because we're specifically choosing times when we know that puppies and kittens will be able to immunologically respond. We've done our due diligence and titer to make sure that there's been a protective immune system response to the vaccines. Those pets are protected for life.

If you follow the protocol, you know that they've been titered two to four weeks after the last vaccine occurring at 14 to 16 weeks and that they've responded, there is not a reason for you to continue boosting, because giving more vaccine doesn't make your pet more protected. It doesn't give them a better immune response.

That's one of the fallacies that many of my clients don't understand when they first begin asking questions about vaccine. They assume that when they get that postcard in the mail, they say it's time to find those boosters. Sometimes those postcards say things like "Your pet could be unprotected." "Hurry, you're four days overdue for those vaccines." It's a little frustrating for me as a proactive veterinarian, because what we're working off of is fear.

Dr. Schultz: Yes. One of the things that is really important to understand is that just like when we look at vaccines for children, one of the core vaccines is MMR. I refer to distemper, parvo, and adeno as the MMR of puppies. Those three vaccines – all core vaccines that every puppy should receive – have the potential to provide lifelong immunity. We're not sure that all puppies will have lifelong immunity, and that's one of the reasons that we will vaccinate a few times through the life of that puppy.

Now it depends on whether you want to take a minimalistic approach to vaccination, which I've been doing for many, many years with my pets, my children's pets, and my grandchildren's

pets. They will be vaccinated as puppies. I make sure that they respond, or as kittens to panleukopenia. They don't get vaccinated again.

But a lot of people are not comfortable with that kind of program. And so what we've done is we've come up with guidelines where we suggest that if you don't do that antibody titer two or more weeks after the last puppy shot, then we're recommending that you revaccinate in a year. That's what the American Animal Hospital Association and the American Association of Feline Practitioners recommend. After that, what we recommend is three years or longer, which means not more often than three years.

That's a very conservative number in that most of those animals will be protected for life. So giving the vaccine every three years may not be necessary, so some clients and dog owners in particular (not so much the cat owner) will go with titers to actually determine whether or not they need a so-called booster vaccination or revaccination. The titer can be used again at a later time. And you can decide: do I want to do a titer at three years and see whether or not the animal actually has immunity and needs to be vaccinated? Or do I just want to vaccinate? That option is available to you.

Titering and Diagnostic Labs

Dr. Becker: Most of our viewers are not interested in providing vaccines, unless of course it's immunologically needed. So that's when a titer becomes a really great choice. Now let's talk a little bit about titering. There are several different methods of titering. And if you get an older animal whose immune system hasn't seen, let's say, distemper virus, if you're measuring the number of antibodies like serum virus neutralization, you could, in theory, have a low titer and yet the body still has an anamnestic response to memory cells. Maybe you could talk a little bit about that.

Dr. Schultz: I try not to talk about antibody titer, because titer, by definition, does mean the level, some number like two, four, eight, and 16. Frequently, it is a doubling dilution kind of test if you use the gold standard. You brought up the virus neutralization, and that's really the gold standard for antibody to distemper and adeno, whereas neutralization or a test called hemagglutination inhibition is the standard for parvo.

All of these tests are only done by a few labs, most of which are associated with veterinary schools. That's important to understand, too. The gold standards are done in diagnostic labs associated with veterinary schools, whereas the commercial tests that are available use different methodologies. They use something known as a lyso technology to look for antibody. They may use something called fluorescent antibody, etc. But those tests will be correlated with the gold standards so that we know what they mean.

Some of your diagnostic labs will then, when they report back the results, have a number that they give. Some of them believe that those numbers mean something. I don't happen to believe that those numbers mean anything.

Dr. Becker: I think you should say that again.

Dr. Schultz: I don't believe those numbers mean anything as long as they're positive.

Dr. Becker: As long as you have a response.

Dr. Schultz: That's correct. So if you have, for example, the virus neutralization test for distemper, a four or an eight or a 16 or a 32 or a 64 means that animal's immune system has developed antibody. It is prime, and if in fact the animal sees distemper, if the distemper isn't immediately neutralized, there will be what's known as an amnestic or secondary memory response, and the animal will be protected.

The H1N1 Pandemic

Dr. Becker: Much like the influenza virus for you and I that we were exposed to maybe 20 years ago?

Dr. Schultz: Correct.

Dr. Becker: Yes. That our body still has memory to be able to produce adequate immunologic response despite the fact we haven't seen that flu virus maybe in six, seven, 10, or 20 years.

Dr. Schultz: Correct. That's an excellent example. When, for the first time, this H1N1 pandemic flu was spreading around the country last year, there were virtually no people that had immunologic memory to that specific flu type, the pandemic H1N1. The only people that would have seen a similar virus were the ones that were around in the 1918 pandemic. There weren't a lot of those around. That's why especially for younger children, if they were getting that flu shot, they were recommending that they get two of them, because they had no immunologic memory whatsoever.

With an influenza vaccine, which is called a noninfectious or an activated vaccine, the only way those vaccines work is when you give two doses. So unlike the core vaccines that are all modified live or infectious vaccines, where one dose will immunize as long as there's not something like maternally drive down the body to prevent that immunization. You only need one dose. Whereas with the noninfectious, killed, and activated type of vaccines, you must have two doses, and there should be two or more weeks apart. You shouldn't go more frequently than every two weeks.

Transcript:

Dr. Karen Becker Interviews Dr. Schultz (part 3 of 4)

Dr. Becker: So let's talk a little bit about the killed virus that is mandatory in every state: rabies virus. Let's talk about why some states have a one or three year option. Some of my clients think that the three-year vaccine is three times stronger, while some think it's three times as much volume. Some people think it's researched three times longer. If you could shed a little bit of light on what's going on, that would be excellent.

The Rabies Vaccine

Dr. Schultz: Rabies is a really good example of a noninfectious vaccine. Prior to the mid-80s, all of our canine and feline rabies vaccines were modified live. One dose was adequate to immunize. We generally gave that dose at 12 weeks of age or older, when there was no maternally-derived antibody to interfere. In those days with the modified live, you would revaccinate each year, because they didn't know whether or not the immunity was longer than that.

In the late 70s and early 80s, we had an episode occur in this country where some kittens being vaccinated in California came down with rabies. That caused USDA to rethink the approval of a modified live rabies vaccine. This may have actually been not the vaccine becoming virulent, but those kittens may very well have been severely immunosuppressed. They could have actually been infected with feline leukemia virus and/or feline immune deficiency virus. And that's why they came down with rabies. But obviously when that happened, it was decided that modified live or infectious rabies would no longer be allowed. We then started switching entirely over to a noninfectious, killed, inactivated rabies product.

We never did change the vaccination program. We changed the vaccine, but not the program. My recommendations back in 1976, which I published then, in 1977, and 1978, when we switched from a modified live rabies vaccine to inactivated vaccine, we should give two doses two to four weeks apart, and then revaccinate in a year. But we didn't. Fortunately, the rabies glycoprotein antigen in the killed vaccine is a very powerful antigen. They had to add something to that vaccine, which you generally have to add to most inactivated vaccines called an adjuvant.

An adjuvant is a very strong immuno stimulant, which provided enough stimulation to that glycoprotein to allow that one dose of vaccine to stimulate in a majority – not all – of dogs and kittens a protective response until another dose can be given a year later.

Generally, when you go much beyond about six to eight weeks between the two doses, you'll have no immunity at all. For example, any of you who might use a leptospirosis product, you would never go beyond six weeks between the two doses, because you wouldn't have any immunity at all. That's a very weak antigen compared to rabies.

Thimerosal, Aluminum, and Adjuvants in Pet Vaccines

Dr. Becker: Back to antigens. What are those? Could you go over the antigens that are added to veterinary vaccines? Some of the antigens that have been included in human vaccines, like thimerosal, have been removed, but has that been the case in veterinary vaccines?

Dr. Schultz: There's a number of different things added to various vaccines. One is a preservative, and thimerosal, which contains mercury, is a very effective preservative. It has been added to human vaccines for many, many years; it's one of the most effective preservatives. We haven't had thimerosal added to very many veterinary vaccines at any point. We do have other preservatives, but that was one that wasn't used widely like it was in human medicine.

Thimerosal has become very much of a concern, because mercury – being one of a number of heavy metals – does have potential to cause adverse reactions and can be very toxic at high levels (neurotoxic in case of mercury at high levels). It's one of the things that they have made an effort in human medicine to take out of all vaccines or reduce significantly. Right now, most human vaccines no longer contain that particular preservative. In veterinary vaccines, I'm not aware of any of them containing thimerosal, because we didn't have that many in the first place.

Dr. Becker: And aluminum?

Dr. Schultz: Aluminum was part of and is still the most common part of human adjuvants. Alum is the adjuvant that's added, and it's the only one approved for human vaccines. Again, we have veterinary vaccines that have alum or aluminum in, but we have many other adjuvants in veterinary medicine. Veterinary medicine actually has always been far more ahead of the vaccine curve than human medicine. We have new vaccines, using new technologies that have been improved in veterinary medicine, and it's still not approved in human medicine.

Dr. Becker: But there's a lot more research.

Dr. Schultz: There's more research that we can apply to veterinary vaccines. It's not that they're not doing that research for human vaccines; it's just that they're very slow to apply it. They can't get approval for a lot of technologies and new adjuvants as quickly as we can in veterinary medicine.

The other advantage we have in veterinary medicine, which is very critical, and I hope as pet owners, you understand how important this is to your pet. That is the ability for us to do animal studies on a target species. So if I want to develop a new vaccine or drug for dogs, I want to do that work in dogs; I don't want to do it in rodents, which is what you have to do for human vaccines until you can actually take it to a clinical trial. But it takes a long time to get there. It's one of the reasons that we can move more quickly in veterinary medicine. And I think we can also make a better product – we can test it on 10 beagles, so we don't have to test it on someone's poodle.

Adverse Vaccine Reactions in Pets

Dr. Becker: Sure. Back to the adjuvants question, we see vaccine reactions in veterinary medicine. We see pets die from vaccines in veterinary medicine. You see, there are different types of allergic reaction: anaphalaxis, a secondary autoimmune disease, and long-term, progressive degenerative autoimmune diseases. First of all, are you able to see the correlation between overvaccination and an increase in autoimmune conditions in pets?

Dr. Schultz: I think there's no question in both pets and humans – autoimmunity is more prevalent today than it was 20 or 40 years ago. I think there are multiple reasons for that. Without questions, vaccines would be one of those reasons. But there are also many intoxicants, many environmental pollutants, and many chemicals, and so there is a lot of factors in the environment that in what generally is a genetically predisposed individual – and that's the important thing, for example, in immune-mediated or hypersensitivity type of diseases.

Genetics play such a key role. These other factors are triggers to cause in a genetically predisposed individual these immune-mediated diseases. It can be natural infection, vaccines, and all of those other factors. And so yes, we are seeing more of it in all of the species.

Dr. Becker: So if you have pets that have vaccine reaction, what are your recommendations? In my practice, we have a very minimalistic vaccine protocol. We do titer to make sure that it's going to be effective. But if we've had animals that have vaccine reactions, it would be out of the question for me to continue to vaccinate. I simply wouldn't do it.

Dr. Schultz: That's absolutely the approach that everyone should take. Now if it's an adverse reaction to a core vaccine and you've already immunized, what you should be doing is a titer. And if there is any titer measurable, don't give that particular product again. If there isn't,

you're going to be almost obligated to make sure that the animal is protected against these core diseases. There are so deadly, and it's very important to have immunity.

And you have a few options: you can pre-treat the animal depending on what the reaction is, but that would be no assurance that he won't have another adverse reaction. You can switch products, and hope that it was something in that specific product you used initially. But that also won't guarantee that you won't have a reaction, because the animal may be, for example, hypersensitive to bovine serum albumin, which would very likely be in any manufacturer's product.

Dr. Becker: And really, in the risks versus benefits, the risk would be high enough. Certainly, that would be something I would feel uncomfortable doing in terms of revaccinating a patient that has had a reaction, because the potential is there for a more significant reaction to occur.

Dr. Schultz: Certainly.

Dr. Becker: Now, back to the one-year, three-year rabies.

Dr. Schultz: Let me get back to that particular question. We want to make sure that the animal is immune to the core products. Now if that adverse reaction was to a non-core or optional product, which they very often are, quite honestly, the core vaccines are far safer than the non-core vaccines in terms of adverse reaction.

Dr. Becker: We'll talk about why in a minute.

Dr. Schultz: My response is always "Forget about that particular vaccine." If it happens to be leptospirosis, Lyme, or injectible bordetella, don't even think about giving it again.

Dr. Becker: That, to me, would be common sense approach, that if you have a patient with a significant reaction to a vaccine that your veterinarian is encouraging you to get –let's say for protection against leptospirosis – simply just don't continue giving those injections. It would be counterintuitive to do so.

Transcript:

Dr. Karen Becker Interviews Dr. Schultz (part 4 of 4)

Research on Seven-Year Rabies Vaccines

Dr. Becker: Rabies – there's a one-year product in some states, while there's a three-year product. Talk a little bit about why there isn't a 12-year, 20-year, or seven-year rabies?

Dr. Schultz: Thank you for asking that question, because as you know, we're doing some studies right now to try and demonstrate a minimum duration of immunity for rabies at seven years so we can extend that period. Right now, the reason that we don't have one of those products is no one has really done the studies to demonstrate that you can go beyond three years.

Dr. Becker: And those studies are really expensive.

Dr. Schultz: They are very, very expensive. And it takes a long time. For old people like me, that means I should have started earlier. But it's something that we're hoping to be able to demonstrate, and we're now on the fourth year of that particular study. We would like to really come with the information that says you can vaccinate an animal at 12 to 24 weeks of age, and that you don't need to necessarily vaccinate at every three years the way we do now. By the way, every one of the states now in the United States has a three-year rabies law. But you have to know that you may live in a municipality, city, or county that can be more or less restrictive than the state. In some of those states, all of which now have three-year laws, your county or your city may require every two years or one.

What I would recommend to every animal owner -- you are the ones who have the ability to change these laws -- is get out there and change that county or city or town law to three years, because there is absolutely no scientific reason for you to be vaccinating any animal more often than three years with products that are licensed by the USDA for three years. Revaccinating the animal more often will not enhance herd immunity or protection against rabies in that environment.

The other thing that's been found is that the animal that's not getting vaccinated, whether the requirement is annual or every three years, won't get vaccinated. It's just a penalty for the compliant dog owner. They are actually potentially doing harm to their pet, because they're willing to follow the law, whereas the rest of the people who are not vaccinating at all are creating the problem and are not going to follow the law, whether one, two, or three years.

You also asked me the question, “Is the one-year product and the three-year product really different?” Well, most of them are the same. They’re the same product, it’s just that when the studies are done, they did a one-year study, and when the product worked, they had a one-year license. They had a group of dogs that they waited two more years for the three years to come up and that same product became a three-year product. Except there may be some that are a bit different -- some actually may have more adjuvant in them if they are a three-year product. There are some differences.

Dr. Becker: And there’s a one-year rabies vaccine that has no adjuvant.

Dr. Schultz: Correct, and that’s used for cats.

Dr. Becker: Correct. And why was there not a three-year option? Is it because of the time, research, money, and funding?

Dr. Schultz: That’s a really good question. The cat product is actually new technology; it’s a recombinant vaccine. It’s actually more like a modified live, but there’s no live rabies at all. The way that the immune system sees it, they see it as being live, because it’s viral-vectored by a virus other than rabies. The only thing about rabies that’s in there is glycoprotein G that’s in the killed vaccine. The company actually did do studies and demonstrated that their vaccinated group was protected 100 percent at three years. But by USDA law, the non-vaccinated control group must have a certain level of mortality to show that the challenge was effective. They could not come up to the minimum level with the challenge. So, they couldn’t get the three-year license because of that number.

So then they decided to actually do it again. Keep in mind that this is a long-term study – very expensive. They did it again. The vaccinated group had 100 percent protection again. Even fewer of the non-vaccinated cats died. At this point, after trying that twice and so forth, I don’t know if they would try again. I’m not sure that I would, and stay with the one year.

As a member of the vaccine-associated sarcoma task force – now they’re called vaccine injection-site sarcomas – we were asked the question, “Would you use this non-adjuvanted vaccine yearly, or would you use a three-year adjuvanted vaccine?” My lab has done a lot of studies as have other labs done studies on the reaction in that injection site. And it’s really the amount of inflammation that, again, in a genetically predisposed cat, these lethal tumors develop. My response was, “I would prefer to give the non-adjuvanted yearly rather than the adjuvanted every three years.” It’s because there was virtually no inflammation. So even in the genetically predisposed, we would assume that the non-adjuvanted would less likely cause that reaction.

Dr. Becker: So they're looking toward the future of vaccines pertaining to pets. Is the likelihood of us seeing more non-adjuvanted vaccines (which, in theory, would be safer, less inflammatory, and less reactive) high? Talk to me about what's upcoming.

Dr. Schultz: That's certainly the goal in the feline species, especially now that we know that the feline species is much more likely to develop these injection-site sarcoma. You are right; adjuvants, in general, are more likely to cause adverse reactions in general than non-adjuvanted vaccines. So the answer to your question is yes, there are attempts being made to (1) have fewer adjuvanted vaccines, but (2) to come up with new and improved adjuvants that perhaps are not as likely to cause some of these reactions. There's work in that direction.

Dr. Schultz's Vaccine Protocol for His Pets

Dr. Becker: Wonderful. So one last burning question I have: when you mentioned that you've changed your protocol over the years pertaining to your particular dogs and cats, and granddogs and grandcats, if you have a puppy for your own personal enjoyment...

Dr. Schultz: I get those all the time.

Dr. Becker: How many dogs do you have?

Dr. Schultz: More than you can imagine.

Dr. Becker: Okay, let's leave it at that. For the next puppy in your life, tell me what you will do in terms of vaccine protocol for him or her?

Dr. Schultz: I feel very comfortable and confident about the effectiveness of vaccines. I'm also a risk-taker; I ride motorcycles, I have a pilot's license, etc. Not everyone feels as comfortable taking risks as I do.

Dr. Becker: And that would be me.

Dr. Schultz: Yes. So you have to put it in that context, to begin with. A lot of people, after I tell them that, immediately think, "Well, I wouldn't do any of those things that he does." But with regard to vaccines, there are not a whole of people that know more about veterinary vaccines than I do, so I'm not taking very much of a risk at all with my, my children's, or my grandchildren's pets. What I would do is I would probably – because I can do antibody titers -- know when I could effectively immunize my puppy. I would give the puppy a core vaccine (distemper, parvo, and adeno) at that time. I would check it two or more weeks later to make sure that it has not responded. I would probably not revaccinate the animal again for the rest of its life, which I've been doing since 1974.

Would I give a rabies vaccine? Absolutely. That is considered a core, but I was referring just to the distemper-parvo-adenovirus part of the core. My protocol for rabies is not dictated by my understanding of immunology; it's dictated by the law. In that regard, I would give the first dose of rabies sometime after four months of age. In this state, it better be shortly thereafter. Otherwise, I would be in violation of the state rules. I would then revaccinate at a year or within a year of that, and then every three years.

Dr. Becker: There we have it.

Dr. Schultz: That's what I would do, and that's because of the law, not because of that being necessary immunologically.

Dr. Becker: There's a big difference between being immunologically able to respond being compliant with the law. The law doesn't state that they want your dog immunologically responsive; the law states you have to give rabies vaccine every three years. So if you choose not to do it, you simply choose to break the law, which is, of course, people's choice.

Dr. Schultz: But we're not advocating that.

Dr. Becker: Of course. We're not suggesting that you do anything illegal, because we're morally upright, law-abiding citizens.

Dr. Schultz: But we're not advocating that.

Dr. Becker: If you choose to follow the law, it is important to recognize that your dog may have lifelong protective immunity after a single rabies vaccine. And if you decide to be a rebel, which we're not advocating, your dogs or cats could still have protection for the rest of his or her life.

Dr. Schultz: That's why we're doing this study, to try and get that type of information, to see whether or not we may only have to revaccinate every seven years instead of every three years. This would mean that a dog could really end up only getting three or four rabies at the most. That would be going from what used to be annual to three or four in a lifetime, which would be a real advantage.

Dr. Becker: To have a seven-year vaccine, in theory, would be having your pets receive two or three. So research is underway. And it's all because of you. Really, truly, Dr. Schultz, you are singlehandedly changing the face of immunologic veterinary medicine. We're grateful for all the work you do, for your effort and passion for what you do, and for helping all of us make better decisions for the animals in our care. We're wholeheartedly thankful for everything that you do.

Dr. Schultz: Thank you for that. I'd also like to thank the veterinarians who have made a change in their vaccination program. I'd also like to thank the companies, because one of the things

that I knew I had to do is get every one of the companies to actually do studies with their products, even though I've done studies with their products unbeknownst to them. Every one of the major veterinary manufacturers of vaccines has done a three-year minimum duration of immunity study with their core vaccines, and they have all demonstrated their products provide a minimum of three-year duration of immunity. That should say something to every veterinarian that's out there. That's wondering "Can I really go three years?" for every dog owner that's out there. The answer is yes.

Dr. Becker: Confidently.

Dr. Schultz: Confidently, regardless of the product you choose.

Dr. Becker: Excellent. Thank you so much for joining me today.

Dr. Schultz: Thank you for giving me this opportunity.