What to do about Ear Problems in Shelter and Foster Home Dogs

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Lynne Fridley: Good evening, everyone, and thank you for being here for the last installment in our webcast series on dermatology, "What to Do about Ear Problems in Shelter and Foster Home Dogs." I'm Lynne Fridley, program manager for Maddie's Institute. Our speaker is Dr. Karen Moriello, clinical professor of veterinary dermatology at the School of Veterinary Medicine, University of Wisconsin-Madison, where she's been on the faculty since 1986 and is widely recognized as an expert in the field.

Before we start, let's talk about a few housekeeping items. Please take a look at the left side of your screen, where you'll see a Q and A window. That's where you'll ask questions during the presentation. But don't hold them until the end. Questions asked in the last few minutes will probably not be processed in time for a response.

If you need help with your connection during the presentation you can click the Help widget at the bottom of your screen. The green File widget contains the presentation handout, evaluation survey, and a printable certificate of attendance for people attending this live event. So be sure to download and save and print. Dr. Moriello thanks for being here with us tonight.

Dr. Karen Moriello: Thank you for inviting me, and I'd like to thank Maddie's Fund for hosting the seminars. It's really great and I do enjoy sharing information about

skin diseases, particularly important skin diseases that occur in shelters. So tonight's presentation is going to be focusing on ear diseases, or otitis, in dogs and its management in shelters and foster homes. And this is one particular disease where much of what is done in the triage stage in private practice with private pets is very applicable to both rescue organizations and shelters in general.

This is an ear and it looks angry, and this is a classic ear of otitis. Everyone who has ever taken care of a dog has seen this type of problem in one shape or another – sometimes less severe, sometimes more severe. But it's a huge problem, and it's probably one of the most common *[break in audio]* veterinary dermatology.

So the clinical picture of otitis is it's important to know it can happen in any age, breed, or sex of dog. It is more common in the warmer weather, so if that's been your impression, you're absolutely right, and it's the little ears act like tiny, little incubators. It is more common in dogs with poor husbandry, mainly because there's going to be more moisture, more crowding, *[break in audio]* of infectious and contagious diseases, and less just routine care. Some dogs just need a little bit of routine care with their coats.

There's conformational risk factors. Probably the hallmark breed for that would be the Shar Pei. They're sort of born with very closed and narrowed ear canals. But there are definitely other breeds that have problems. Pendulous ears are ones, hair in the ear canal can be an issue, narrowed ear canal – as I mentioned Shar Peis – and then there's all, very importantly, breed risks. Breeds that are at high risk of allergic diseases or cornification defects, such as dogs with seborrhea, are ones that are predisposed to ear disease.

As far as the clinical signs, it's what you would expect: shaking and rubbing of the ears, shaking the head, sort of an odd carriage to the ears and to the head. The dog may be holding his head to the side or there may be a head tilt. Odor is probably the one that I hear about the most: "The dog just stinks and I pick up the ears and it's horrible." But there may be blood or exudate. Sometimes the first signs is you just – the dog shakes his head and your house looks like a crime scene because there's just so much blood everywhere from whatever's causing the problem.

And then there's something called aural hematomas, or these are when a dog will get bleeding between the flaps of the ear, and you'll get this swelling. Painful ears and any behaviors with that. Dogs that are head shy are oftentimes dogs that have had a lot of ear disease, or if a dog that's normally very, very nice is suddenly reacts a little bit more defensively to being petted, the ears may actually be one of the problems.

Okay, so it is important to have just a little bit of information about the anatomy of a dog ear, because it makes it easier to understand the diseases and, basically, when people are talking about cleaning and where the eardrum is, so that you have an idea of where everything is.

So this is a plastic model, and this is sort of a cross-section of a dog's ear. The pinna – everyone recognizes it – that's the ear flap, and then the vertical canal. That's the canal that goes up and down. So if you think of the ears like pipes underneath your sink, the canal that's vertical, going up and down, that's the same canal that – a vertical canal, that's what veterinarians look in. And then the horizontal canal, where the pipes are going back into the wall. And, again, in order to see down there, you need an otoscope. And then where the pipes would go behind the wall, that would be representative of the tympanic membrane, or the ear drum.

And so you can pretty much kind of look down there until you see things, and then you can't see anything behind the wall. So what's behind the wall? What's behind the ear drum? Well, the big space there is the bulla or the middle ear, and that's where a lot of disease gets sequestered. And then also in the ear, or behind the wall, are the organs of hearing and balance, so this might be like the equivalent of your electrical equipment or some other tubing.

So that's kind of how I explain it to clients and to owners who are going to be managing dogs, and it does help a lot because it does kind of give you a feel for the anatomy in a more practical sense.

Now, in order to have otitis, you really need a recipe. You just have to have all the right things happen at the right time. And this is a dog with otitis, and it's almost impossible here to see the orientation because the ear is just so proliferative; there's all those lumpy bumps all over it and red. But, trust me, it's an ear.

All right. So the inflammation is the first one. You need to have something that causes an increase in secretions in the ears. The ears are just an extension of the skin and they have their own oil and cell exudates that secrete into the ears. The inflammation will cause the ear canals to get narrow or stenos. So if you're going back to the anatomy, using the pipes under the sink as sort of an analogy, things can line on the inside of the pipe, making it narrower and narrower and narrower, till eventually it clogs up. Also, inflammation also causes an increase in the temperature of the ear, which favors the growth of bacteria. And then you can have a change in the surface of the ear canal and the environment. It can become ulcered or it can become roughened. And all of those things can make it much easier for the disease to be perpetuated.

Now, a major factor in ear disease is narrowing or stenosis. This will trap the secretions. It prevents the normal ear canal cleaning. The ear actually kind of has a little mechanism by which it actually cleans itself out. Material comes down the tympanic membrane and then sort of just gently moves out and gets emptied out of the ear canal, kind of like a little escalator. And that all stops and shuts down, so everything just sort of plugs up. It causes humidity in the ear. The inflammation leads to more stenosis, leads to more inflammation and more stenosis, and this becomes a vicious cycle.

It's a major cause of pain because the ear canal – what's holding that canal and giving it shape is cartilage and it doesn't stretch. It has a limited amount of plasticity to it, and once it is fully extended and you have more and more pressure on there, you get a tremendous amount of pain, not unlike having a headache, where you have, you know, your cranium which holds things in place.

Also, if it's stomachic, you can't get medications into the targeted area, which is the ear canal. So, basically, you might as well be putting the ear drops on the dog's nose for all it's doing. And the stenosis can be temporary, but if you leave it unattended, the ear can become fibrotic and thickened or even calcified like bone.

Okay. Now the next thing you need is microorganisms. Bacteria alone don't cause an infection. The dog has a healthy ear, doesn't have inflammation, doesn't have stenosis, and you put contents of a petri dish in there, no problem. It's not going to do anything. You need concurrent clinical signs. You need the other things to be present.

Now, the normal flora is what starts to overgrow, mainly staph, some strep and yeast. They're present there normally. But once the environment

becomes more hospitable to them, they take over. Bacteria in association with clinical signs, you will see that, so if you do a swab and you see all these things and the ears inflamed, it's important.

Rods are one of the organisms that we worry about the most. So if you are thinking about the bacteria, bacteria are like little round M&Ms, and rods might be like little Good & Plenty candies, that kind of a shape. And probably the most problematic is one called Pseudomonas, because that one is associated with a lot of very severe ear disease. And you can have yeast and cocci. And these are just two slides showing bacteria. On the left are yeast and on the right is a full field of rods and cocci.

So when you get into a dog with ear disease, the question always is "What do I do first? Where do I spend my money? What's the most cost effective thing?" And that simply is an ear swab cytology because, with that, you can go ahead and start moving toward making treatment decisions for your patient – your pet or your guest.

So the first thing is make a slide for staining. I just roll it out like you would do. And also do a slide in mineral oil because you are looking for Demodex and Otodectes. Everyone's very familiar with looking for Otodectes when we have a juvenile patient, a pediatric patient, but sometimes you'll find it in adults. But very importantly, a lot of dogs with chronic skin disease and chronic otitis will have Demodex in their ears and Demodex on their body, and you can often find it that way.

Now, some rules of thumb for cytology, and that's just a nice little swab there with a big pile of pus on it. It is the core diagnostic for ear disease. Always get it before you do anything else with the ear, cleaning it. If you think you're going to do ear culture, get one right away before cleaning it.

You want to always look at the findings in light of whether or not there's clinical signs. So if the dog doesn't have any ear problems, doesn't have any clinical signs, and you do an ear swab and you find bacterial organisms, they're living in peace with the ear and they're not clinically important. However, if the dog is having problems, then it becomes clinically important. You always need to have abnormal findings in the presence of disease, and what that does is it tells you what your action plan is going to be.

Now, this is a slide, and it kind of looks like balloons or bubbles. And what this is is actually typical debris from a dirty ear, just a dog that has got a lot of ceruminous debris in the air. And this is just what cerumen looks like in the ear wax when you stain it. It doesn't really stain very much – the little bit of blue there, epithelial cells, and this is normal. And dogs sometimes can have a lot of this and there's no problem with it, but you need to be able to recognize that part.

Okay. So cytological specimen. So what do you do when you have a cytological specimen? Well, the first thing is – you know, the first one I just showed you wasn't very cellular. You didn't see very many organisms. It was very pale and not staining. But if you do see cellular samples and you see white blood cells or neutrophils, you need to assume that there's an infection. It might be deep in the ear or it may just be in the very distal part, very superficial. But it's there.

You need to remember that you can have a really bad infection without a lot of organisms there. If there's inflammation, stenosis, and pain, and you see organisms there, but you're thinking, "Wow, I should really see a lot more for as severe as it is," just remember that doesn't necessarily reflect it. You don't know what happened to your dog before it came in. You don't know if someone's cleaned the ears. And you also don't know if the

infection might actually be deeper in the ear, and so the few organisms that you see out in the external ear canal aren't very helpful.

Cocci. If you just see cocci and yeast only, you might have a dog with allergic disease or primary seborrhea, so those are some things to think about, particularly if you only see cocci and yeast with no white blood cells. If you get a lot of overgrowth, those two organisms in dogs with allergic or bacterial disease. The worst case scenario you can run into are rods.

Okay. So as far as the sizes go, it does help to be able to recognize these on sight. And Malassezia or yeast are really big. If anybody can remember the circus peanuts that you get in – yeah, chewy pink ones that they're kind of made of candy, the big peanuts like that, those are Malassezia sizes. Now, cocci would be about the size of, like I said before, M&Ms, and rods like Good & Plenty. So yeast are really, really big, and rods and cocci are much, much smaller. And in the sample on the slide on the right, you can see, down in the bottom, right about the 6:00, you can see some big organisms, and those are yeast. The smaller little dots are cocci, so you can see how different they are in size.

Now, another thing you're looking for is whether or not there are bacteria present. And you can find them in cells, like on the right hand side. You can see, where there's white space, you can see there's blue dots there and those are cocci. Or you can find them extra-cellularly. Either way they're important when you see them in the presence of neutrophils, and it indicates that you have a situation that probably is going to need a culture if the animal's had any history of ear disease before.

Now, another thing you can see that helps you determine that there's a problem is what's called nuclear streaming. And that's all that – you can

see all those like lines and waves that are present there? When you make a slide, you roll out material and you essentially smash it onto the slide, and it damages it, and so it causes the cells to kind of just stream out and drag their debris across the surface of the cell, and so you may not see intact white blood cells. But if you see that, kind of streaming like that and those lines, that indicates that it's nuclear streaming and that there is infection present and inflammation.

Okay. So with that information, you have to have a plan, and so when you are dealing with otitis, you have to make some decisions pretty quickly because these *[break in audio]* are painful and very uncomfortable for the dog and they're odorous and they have a lot of – you know, and sometimes you have windows by which to solve a problem.

So, otitis triage. The first thing you're looking for – obviously, everyone's looking for – is there trauma. What you have for a ear may just simply be a bite wound. It might have been frostbite, any kind of trauma. And that goes down to – you know, work that into your trauma situation.

Then if there is no evidence of trauma, what you're looking for are clinical signs. Is this acute? Did it just happen? Because ear diseases can really flare up overnight, in four to six hours. Because if it's acute, it might be acute and curable, such as Otodectes or just a dog that gets swimmer's ear.

Or is it a complicated problem? And that means that this problem has been going on for a long time. And how might you tell that? You might see signs of other skin disease *[break in audio]* dog. Maybe the ears are very thickened. Maybe there's a lot of pigmentation on the ears. Maybe the dog has been licking its feet and you see a lot of salivary staining, as we talked about in the allergy module. Or the dog has got a matted coat

with a lot of hair loss. Anything that suggests that there's other problems indicates that that might be more of a chronic problem.

And then the other thing you're looking for is does the dog clearly have end-stage ears. So what is an end-stage ear? An end-stage ear is an ear where there has been so much chronic damage that it's not likely that you are going to be able to manage the problem medically. Or does your patient need – or your dog – need immediate surgery, such as this dog, with an aural hematoma? That's what you're looking for, trauma. Did this come acutely?

If you have a dog with lots of skin disease in ears, well, that's complicated, and that falls into any like, usually, allergy or keratinization disorder. Do I have a dog that maybe I need to talk about surgery immediately because it's got an aural hematoma? Or do I have ears that we really need to talk about might need very drastic surgery, such as a total ear canal ablation?

Lynne Fridley: Well, we have our first poll question, Dr. Moriello. And this is where you and the audience, you can join in the conversation by answering this poll question directly on your screen. How often can you do otoscopic examinations on dogs at intake? Always; almost always; visual exam only; not part of the normal intake exam; never, because we lack equipment; don't know, or not applicable. Please answer on the screen. Oops. I really didn't want to do that yet. Please answer on the screen, and we'll go to the results in just a second. How often can you do otoscopic examinations on dogs at intake?

I'd like to remind the audience also to get your questions in for Dr. Moriello, and you do that in the question and answer box on the left hand side of your screen, and please get them in early. We'll take the questions at the end of the presentation, but don't wait until the end. Get them in as

soon as you can. So let's look at the results. Oh, well, that's pretty interesting, Dr. Moriello. What do you think of that?

Dr. Karen Moriello: Well, the people who are answering "always" or "almost always" obviously have equipment and obviously have had experience with doing otoscopic exams. Visual exams only are not necessarily an incorrect thing to do, because if the ear looks good, then there's no reason to go ahead and try to exam the dog, especially if you're limited on time.

Now, when we're looking at patients with dermatology problems and the ears are the painful, we actually don't even try to do an otoscopic exam on an awake dog. And then "not part of the normal intake exam" – I might just suggest peeking at the ears, because if there's odor or a dog is painful or somewhat difficult to handle, that might be part of the problem. But it's sort of a general mix across the board and usually just reflects what the resources are.

Now, otoscopic exam. As I said, do it if you can. In dogs that are very painful, this may not be possible. And, definitely, if it's going to put you at risk or any of your staff at risk, then you need to remember that you need a really good restraint with this. And probably no ear exam is better than anybody getting hurt or getting bit or the dog getting injured, because if you cause a lot of pain at the time you're doing the otoscopic exam, that will make that dog – it will contribute to that dog's head shyness and actually kind of fear of being handled by veterinarians. When I have dogs that are difficult to handle and they're kind of head shy, sometimes I'll just ask, "Have you been cleaning his ears since he's been little?" And you'll get, "Yes." And I'm like, "Well, okay, that explains to me why we're having trouble looking at the dog."

Okay, so let's talk about what do you do with uncomplicated otitis. And this is a situation where you look, do an exam – either visually or with an otoscope – and you see that there's a problem in the ears. Okay. An uncomplicated otitis is like a simple infection. There's no other clinical signs present. It sort of indicates or suggests that it might be treatable and curable.

When might this occur? In young dogs, particularly with ear mites. It might be common in warm, humid weather. The ears may be painful but they palpate normally. The ears should be very easily collapsible. It shouldn't take any difficulty to collapse them. If you can't remember how easily a dog's ears should collapse, just go cuddle the next puppy that you can get your hands on and that's how it should be. You might see just redness and exudate on the ear but no signs of chronic changes, so the ear epithelium looks smooth; it's just red. And these are dogs that respond to conservative treatment, with ear cleanings and topical otic ointments.

There are some breeds of dogs that, we don't know why, but I see very commonly beagles and basset hounds as sort of just pediatric patients. They'll have one really bad episode of otitis as a puppy, and it's yeast. I don't know if it has to do with the – usually, the dogs are just newly acquired, newly adopted – I don't know if it has to do with the stress or not. But, you know, that also happens. Just because a dog that is of a breed that's predisposed to ear disease or skin disease has a problem as a young dog doesn't necessarily mean that's going to be what happens all the time. So, Lynne is back on.

Lynne Fridley: And here's the next – yeah – the next poll question for the audience. Please, again, answer on your screen. What do you do when you see hair in the ear canal of a poodle? Do you pluck it, clip it, do nothing, don't

know, or not applicable? What do you do when you see hair in the ear canal of a poodle?

So answer on your screen, and after you've done that, I'd like to remind you to get your questions in for Dr. Moriello and do that in the question/answer box on the left hand side of your screen. And we'll go to the results.

Dr. Karen Moriello: All right. I like these results. Okay. Some people pluck it, some people clip it, and a lot of people don't do anything. And so let's talk about your hair in the ear canals of – now, poodles are sort of our poster child for it, but I've got some suggestions that might be helpful.

So, with regard to poodles, there is something that I have noticed over my many, many years of being a dermatologist, is that standard poodles oftentimes that come to me with chronic ear problems, will have one ear canal that is congenitally narrowed. When you do our visual diagnostics, it seems narrower. When we do imaging with like radiographs or with a CT, one ear canal is just wide open, just huge like the Mississippi, and the other one is just narrow like a stream, and there'll be no inflammation there. And so they're sort of born predisposed to having problems.

And those kind of dogs are dogs that can benefit from certain types of surgery, such as a lateral ear resection, and they're definitely ones where hair in the ear is going to be a problem, and so it might be beneficial to remove it. Now, hair in the external ear canal actually serves a purpose. As we all know, it's there to prevent foreign material from getting in there, particularly on the mat, and it's supposed to be there.

Some things that are important to note is that the hair root can be very, very long and almost sometimes is seen to – you can see a hair and you

pluck it and looks like the hair root comes from behind the tympanic membrane. So you think you're just plucking the hair from the ear, but if you're really getting in there with your hemostats and plucking hair, you might be plucking it from very, very close to the ear drum.

Plucking of hairs is a very common cause of dogs with otitis media, especially in dogs where it's been started really young and it's going on all the time and there's no history of skin disease, no history of ear disease. It's just what we've always done with our dogs for the last however. And dogs will come in. Once we stop that, we then go ahead and can resolve the otitis. But as long as the plucking, which is causing micro-trauma, goes on, it can be a problem.

And then another thing is we can have hairs sort of ringing all along the tympanic membrane. So what you're looking at in the picture there is – the white thing at about 1:00 to 2:00, that right there is a small catheter. All those little black lines are tiny, little hairs down by the tympanic membrane, so small you can't get them. And sometimes they tickle the dog's ears, but the point of showing this is to show you how far down those hairs go. So you need to be really careful and have a really good reason to remove the hairs from any dog's ear. Obviously, if they have problems and they've got otitis, you may need to do that in order to clean the ear properly, remove all the pus and debris, and then eventually go ahead and successfully treat the ear.

If the dogs don't have ear problems but the hair in the ears is problematic, I might suggest just clipping it. And what I really like to use are those little, tiny miniature clippers that you can stick up into your nose to clip nasal hairs. They work really, really well because you can just clip the hairs really short and then you don't get a lot of that exudate and smelly, waxy debris building up on the ears.

If ears need to be plucked for any reason – it's just standard or it's just something you really feel strongly about – it's really important not do it if the dog has a tendency to get ear infections. And if that still can't stop you, then every time you pluck the dog's ears, always put a little amount of steroids in there to decrease the inflammation. This might be a time when you might even want to use a combination ear product that has a little bit of bacterial anti-yeast, antibacterial, and steroid in there to calm the infection down, because it's very, very uncomfortable in that ear and very tender, so we'd like to be a little bit more careful, especially since this is something which is recognized as a common practice and also something which commonly leads to disease.

So, getting off my grandstand for plucking of hairs, let's talk about one-time triggers and treatments. Now we're back to our little plastic model. When you want to do gentle ear cleaning, probably the simplest thing to do is to take your cotton ball, which is in that ear there, and saturate it with your ear cleaner, gently tuck it into the ear and squeeze and allow the ear material to drizzle, literally drizzle down into the ear, and then gently massage the ear.

I prefer this technique over squirting ear cleaner directly into the ear canal, because the ear – first of all, if there's bacteria or yeast or anything there, you can contaminate the tip. Secondly, squirting a cold stream of fluid into the ear is uncomfortable. Also, in some dogs, when that fluid hits the ear and the middle ear, it can make them very, very dizzy and they can get vestibular signs, and that's very scary because it can also look like a seizure. So I do; I prefer this.

And then, when you are using an ear cleaning product or a topical, use something which is antibacterial, gently cleaning it. For treatment, use a

combination otic product, such as an antibiotic, antifungal, and steroid. And there are many, many products out on the market available to use.

When you are putting drops into the ear, it is important to kind of look at that ear and look at that canal and think about it. If you just put one or two drops in there, do you really think it's going to cover the surface area? No. You really need to put in a generous amount. And there've been a number of dermatologists that have done some smaller studies where they've actually looked at the volume of ear medication may be directly related to the outcome, especially when you're using very liquid products.

Products that are an ointment, that can stay around a little bit, again, you still need to use a little bit more than just a few drops because all it's going to do is just – essentially, probably it won't even make into the outer part of the vertical canal, and you want to treat that whole canal. Probably one of the questions someone's going to ask is about ear cleaning – do I like Q-tips, and I don't. I like if anywhere you could put your finger is great to clean.

Now, complicated otitis. That's a dog that has very severe ear disease and there's generally signs of other skin disease present. This can happen at any age. The ears are obviously affected, painful. It's usually a bilateral. One-time trigger diseases, simpler things, may often be just one ear, so that may be a clue – bilateral ear disease. And if you have any kind of history, particularly if animals are being surrendered, most people will tell you that the problem's been going on for a while and it's complicated. It might have been something curable and simple when it first happened, but, for whatever reason, things didn't resolve and there you are with a chronic case of otitis.

So, at intake, when the animal's presented to you, your visual exam is really important. One of the most important things you're doing with your visual exam is just looking to see if the ear disease is bilateral. You're looking to see if there's ulcers. You're looking and you're trying to feel how compressible is that ear canal. If it's easily compressible, that's a good sign, meaning that there hasn't been a lot of damage to the canal. If it's harder to compress, it's getting fibrose, indicates chronicity. Start thinking about allergies, seborrhea. If you can't close it down at all, it just feels like a rock, as this cocker spaniel is in the corner that indicates that what you have is a very serious ear problem that probably isn't going to be able to be easily managed medically. So just those two things – you know, just looking at it will help.

Now, another thing you could do is you can listen. As you're sort of manipulating the ear, you can listen to see – or, excuse me, to see – to hear. Do you hear food in there? It sort of sounds like *[smacking lips sounds]*, like that. And that's fluid in there that usually indicates a very severe otitis externa and possibly an otitis media. Obviously, don't forget your nose. Your nose can always help too in identifying things. But the palpation and visual exam is important.

Okay. Triaging. Do we have end-stage ears? If you look at this cocker spaniel, one might think that somebody's calling his name and his ears are perked forward because he's paying attention to you. Well, unfortunately, this dog hasn't been able to rest his ears back for a long time. This is what we saw when we flipped over the dog's ear. The entire – not only was the ear canal cauliflowered on the inside, but that cauliflowered material extended all the way out to the ear pinna and the ears were hard as rocks.

This type of patient, when seen, is a patient which is immediately best treated by aggressive surgery called a total ear canal ablation. And this

can be life changing in dogs and can totally change – a dog's disposition who's been really, really grumpy and irritable can be totally different within a few hours of surgery, because this is so painful a disease and these dogs do really, really well. But if you see this, this is a situation to immediately powwow about and decide, you know, are we in a position to do – have the dog adopted by somebody who knows we're going to do a total ear canal ablation. Do we do this now before we adopt the dog? What's our best option there?

Now, cost effective diagnostics. If you need to convince somebody or you're not convinced that this is an end-stage ear, simple things to do is radiographs or, if you have access to it, a CT scan to look to see do I have any salvageable ear there. Is there calcification present?

And another thing that may be important, even if the ear canals are hard and partially open, would be to do a culture to determine whether or not you've got multi-drug resistance. If you have an infection and it is resistant to all of the bacteria that – excuse me – the antibiotics that you can test for, it may be impossible to resolve the infection because it isn't just on the surface of the ear, it's deep into the tissue, like a cellulitis, like a severe cat bite abscess, but on the ear.

And then occasionally it becomes a very emotional situation where everyone's not really sure, and we'll talk about it a little bit later, but sometimes we can do a steroid trial to decrease stenosis. When we're doing these cost effective diagnostics, what we're trying to actually answer the question is, have an end-stage ear – if there's any question – is there any chance it could be managed medically? Because, if not, then we're talking about surgery.

Okay, so confirmation of end-stage ear disease. On the right, you can see the arrow is pointing to a normal air-filled ear canal. And you could see that in both the right and the left sides. You see nice, dark, air-filled ear canal. And that dog has normal ears. On the left, you don't see that. And then also you see, where the ear tissue would be, you see some dark – excuse me – some white, dense material, not as dense as the skull but very similar to it. And that's calcification.

Once you see that, and this is just on plain film radiographs, so if you're in a situation where you can do radiographs and you can do really well – position radiographs under general anesthesia, lay the dog on his back and fold those ears out – you might be able to see that and you wouldn't have to necessarily refer the dog for anything further. This indicates end-stage ear disease, and the next step is how do we get the dog the medical and surgical treatment that he needs.

Okay. Now, what happens in a total ear canal ablation? Well, this is a dog with huge – the ear canal is totally obliterated by this proliferative tissue, didn't respond to steroids, and very well may have had resistant infections. But, in this surgery, what they do is they save the pinna, and what they do is they remove everything. They remove the canal and all that proliferative tissue, and at the end of surgery – this is a dog I actually had taken care of – the ear looks completely cosmetically normal, and that pipe underneath – the vertical pipe underneath the sink and the horizontal pipe, as we talked about – all that's been removed and any tissue that needs to be removed to help cure it.

And this little dog had surgery. She was a great dog, and it was a situation where her owner had a medical emergency and she needed – she was ready to go home and she needed to go home, and so I took her home. She was a great dog, and I got a lot of experience for a couple of weeks

taking care of one of these dogs post-op. So I can tell you that they do really well. This dog was a totally different dog, much more active post-surgery even though she was, you know, painful – ate, played. She could hear because one ear was only – the surgery was only done on one ear, but she did well.

Dogs that have had the surgery on both ears, they don't hear because the ear drum is removed. Owners oftentimes report they think that the dogs are hearing, but sometimes the vibrations on the – we believe maybe vibrations are transmitted up into the dog's skull area, telling them something's going on from their jaw. But dogs adapt really well to hand signals and just normal pattern routines in the household. And dogs that live with another dog, they're sort of their hearing aid dog. You'd never even know it. But they do well. They do really well.

Now, if you're thinking about the ear diseases, there's four big causes of chronic otitis, and so we're past our triage of that. And the first one is there's an obstruction. And this can be foreign body. This could be a tumor. Or it could be treatable stenosis. The dog's coming with chronic otitis. You're thinking, "Well, is there something there?"

And then the next thing is undiagnosed infection or resistant infection. Many times cultures haven't been done, things were treated empirically, which is perfectly reasonable to do. Or maybe the yeast that were present weren't treated and that has been perpetuating it. So that's one thing.

And then you can have an undiagnosed middle ear infection, and also a perpetuating, underlying trigger such as allergies and febriac disease. So when you have a dog with chronic otitis, think, "Is there an obstruction? Is there a resistant infection? Could there be a middle ear disease, or is there an underlying whole body disease?" And you can have multiples of

these, but just getting those four things down and thinking about them will help you figure out what to do.

Now, obstruction. This includes but it's not limited to inflammation, swelling, foreign bodies, tumors being present, breed related, such as Shar Peis. So what can we do for proliferative otitis that's due to stenoses?

So if a dog comes in and you feel an obstruction – you don't think it's mechanical or you don't think it's a tumor or some other type of foreign body; it just looks like proliferative otitis – we can do a steroid response-to-treatment trial. And this is what we do to try to shrink down that tissue, because the tissue in the canal will proliferate just like any other tissue. And so what we'll do is we'll give them milligram per kilogram orally of prednisone, 15 to 30 days, and look to see does the canal open up.

And it's amazing. Some dogs that – we'll get a call from owners and they'll say, "You know what? My dog can hear. He hasn't heard in a long time." Bilateral stenosis, the dog gets on steroids; we open up the ear canal; he doesn't feel like he's under water, and he's doing great. And this is the ear after steroids in the same dog, and all the swelling of that tissue has gone down.

If that happens, this is something which can be managed medically. And the way we would manage that is look for the underlying trigger. Usually it's a seborrheic ___ allergy. But also then try to keep that ear from getting swollen again by using maintenance dose of ear cleaning and topical steroids.

Okay. Now, of course foreign bodies. There's all sorts of foreign bodies. Tumors are a big one, as is indicated here. Polyps. The pencil is there for a reference for size, but this is a collection of the things that I have

removed from dogs' ears. The only thing not shown there is a tiny, little matchbox car, which was parked in the garage – the ear garage – of a basset hound by a small child. But it is amazing what finds its way into the dog's ears, especially when there are children present. And you're looking down the ear and you see something kind of purple or green. You're going, "Wow, that's kind of odd." So foreign bodies can not just be tumors. They can actually be something you can remove.

All right. So what else about ear tumors is important? Well, ear tumors usually are considered to be – you know, when people talk about tumors, you usually think, "Oh, well, cancer's developed in the ear." But what has been recently published is that dogs with chronic ear disease in both ears, the inflammation has gone on to develop into dysplastic, disorganized tissue which then went on to develop into bilateral ear neoplasia in the ears, such as this.

This is proliferative tissue. When it was histologically examined, there was cancer of the ear tissue that was present. So bilateral ear canal, total ear canal ablation was curative for this problem. But that is a good reason to get a biopsy of tissues, and especially when people are doing total ear canal ablations. That's why they always take a biopsy of it, because they want to know have they missed a tumor. Usually, these tumors are locally invasive, but we do want to know, just in case they are more aggressive and start to spread.

Of course, then you also have stenosis, which is Shar Peis. No amount of surgery will open these ear canals up. These are ears which are chronically managed. Some of these dogs get pulsed oral steroids to keep their ears open, but most of them, if they have ear problems, it's ear cleaning and topical steroids.

And then there is another disease. It's not something that we've just recently discovered; it's just something that we now recognize in Cavalier King Charles spaniels. And this is a disease called primary secretory otitis media of these dogs' ears. They may present with ear pain, shaking, deafness. You look in the ear. You don't see anything. If you can do an otoscopic exam, you might see sort of a bulgy tympanic membrane. And what's inside the ear is just mucus. And on the top, that's just a little bit of mucus on the end of a swab being kind of pulled out of the ear. And this is mucus being stretched, kind of like joint fluid, in between my fingers and my hands. And it's mucusy.

How do you treat that? Well, you can flush the ears with a middle ear irrigation. That may relieve it for a short period of time or a long period of time, but oftentimes it's needed to be repeated over and over. It's not something that we can cure. It's something that we manage.

Okay. Undiagnosed or resistant infections. It can complicate any of these, and it can have treatment related problems such as compliance issues with getting medication in the ear. And I don't just mean the owner. Sometimes the dogs are not compliant at all because the ears are painful, or maybe the treatment with drugs has been the dose was too low or the treatment was too short. Low doses of antibiotics and too short a treatment are two big predisposing problems.

Untreated Malassezia or Candida are yeast infections in the ears, and many times they're untreated because the numbers aren't as high as you see cocci or rods, so we don't think to or they're not treated as aggressively. But they are important, and oftentimes you can resolve these problems by treating everybody you find there in an inflamed ear. Sometimes you can have multiple strains of things or methasone-resistent

isolate. And that may be it, so that's why culture and susceptibility is important. And, again, we've mentioned rods several times.

If you have a dog with a multi-drug resistant infection and it's been going on for any period of time, the only way to be completely rid and done of the problem may be a total ear canal ablation, because it's oftentimes nearly impossible to find a topical that will work, and usually we're using products which are very expensive because they're from the human sector and they cost a lot of money to treat them. And yet the infection is sequestered into the tissue and we can't get rid of it. So, for many of these dogs, when we've looked back, we think, "You know what? We probably should have gone to surgery a lot sooner." So the number of organisms, as I said before, doesn't reflect infection, so you need to pay attention. If you've got an inflamed ear and a resistant infection, it's important.

Rods are the most worrisome, and that in particular is Pseudomonas. If you see rods on a slide and a dog with ear inflammation, it is an indication to do cultures. So that brings us to indications for ear cultures – and that's a little bit of pus at the end of the swab – including but not limited to complicated ear infections. This is money well spent. You need to know what you're treating as opposed to just giving and prescribing antibiotics prophylactically. Once it's complicated, you need a guide.

Purulent ear disease. If you have a lot of exudate present, it's definitely indicated because usually you have multiple things to do. If you have a dog with what seemed like a simple infection, treat it appropriately just like you've treated 20, 30 other dogs in whatever period of time and it doesn't respond to therapy, it's time to culture because you may have had a strain that was very susceptible but now has become resistant.

Complicated ear infections. Oh, I've mentioned that twice. Finding rods on cytology. Persistent finding of bacteria. You're treating a dog, you're treating a dog, and the ear seems inflamed and yet you still find bacteria, it's time to do it.

Then, another big cause is otitis media or middle ear disease. Oftentimes, middle ear disease will present with a dog with a head tilt. And that head tilt may be due to neurological problems or may simply be that the ear is so painful, he's cocking his head to the side. Whoops. I think I kind of lost control there. I've regained control, I hope. Okay. Dogs that have got inner ear problems or dogs that present with their head tilt and they've got inner ear problems, they'll usually have an astagment, they can't stand, they'll have vestibular signs. Those dogs have middle ear disease, inner ear disease.

Now, you can have middle ear disease or otitis media with evidence of infection, such as on the upper left hand side, where you've got black debris coming out of the ear. Or, very annoyingly, the ear canal looks normal, yet the dog will have these intermittent ear infections or intermittent episodes of fibular disease. You can have infection sequestered behind the tympanic membrane. The vertical canal looks good. The horizontal canal looks good. But that tympanic membrane can wall off infection and it may rupture and heal and rupture and heal. So one of the hallmarks of otitis media is recurrent infections of the ears that don't resolve.

What is happening there in a dog with middle ear disease? So here we're looking at – on the top is a picture of the normal ear, and that white part is the ear drum, and behind it you can see the tympanic, the bulla, the middle ear, and the organs of hearing. It is nice and pink and there's nothing there. When there is fluid or infection in there, it fills up that canal, so

obviously you don't get – the ear canal isn't – ear drum, rather, has to vibrate for sound to be transmitted. And, obviously, if you have fluid in the ear, it doesn't get transmitted very well, so dogs don't hear as well.

And then, as the fluid builds up, you can see the bulge of the ear drum. That is really, really, very, very painful. And small children that get middle ear disease are screaming at this point because it's so painful, and yet our dogs are very tolerant. Oftentimes, when the ear drum ruptures, it releases the pressure and the dog may actually feel a little bit better. The problem is still there, but the pain is diminished.

Now, this is a CT of a dog with a middle ear disease on the right hand side. The cavity there is filled with air, the one up to the right hand side. On the left, the parallel cavity is filled with gray, meaning it's filled with fluid, and that's what it would look like on a CT exam of a dog with middle ear disease, either from fluid or from a tumor. Can you see this on a radiograph? Sure you can, but many times the better diagnostic is a CT if you can have that option. But, clearly, radiographs, if that's the best you have to do, can definitely be helpful. Lynne, you're back.

Lynne Fridley: Okay. We have – yes, and this has been very interesting, Dr. Moriello. We have another poll question for the audience. Do you do middle ear flushes in your organization? Yes, no, don't know, or not applicable. Do you do middle ear flushes in your organization? And as we're almost getting to the end of the presentation, I want to encourage you one more time to get your questions in for Dr. Moriello. So let's go and look at our results.

Dr. Karen Moriello: Okay. It seems like just a small number of people do them and the majority don't. There's a lot of reasons not to – not to be able to do them. What's necessary for a middle ear flush for dogs is the ability to actually

have a strong indication of it, have general anesthesia, and some equipment. Now, contrary to what you might believe, you don't need to have a very expensive ear video otoscope. You can do this with a instrumentation otoscopic head.

So what are you looking at here? Well, we're looking back at that same little plastic model – got a lot of mileage out of it in this talk. What you're looking at is the ear, and what that little white tube there is, is that is a tomcat catheter. When we do a middle ear irrigation, we will get any samples that we need, put them aside, clean up the ear, shape up the ear, clean out the ear canal. And then, using a sterile cone, we will put an otoscope in the ear with a cone and gently snake this little tomcat catheter down there while we're looking, and make a tiny, little puncture in the ear drum between 5:00 and 7:00, and that is what's called a myringotomy and that is the basic thing you need to do for an ear flush. So you need these: general anesthesia, good visualizations, so you need a decent otoscope, but you don't have to have a video otoscope. You can definitely do it in practices.

Now, on the right hand side, what you're looking at is there is an otoscope inside of the dog's ear, and there's a cone there. And up along probably about 11:00 is a little white tomcat catheter. And what's happened there is we've been flushing fluid, clear saline, into the ear and it is bubbling up and it is rinsing out and essentially removing all of the packed in debris that is in the middle ear. And all that black, flocculent material was pus and debris in the middle ear. And you would just keep doing this over and over again until you get a clear fluid coming back. And there are many, many other tutorials and webcasts available on the Web, for the veterinarians in the audience who would like to try to do this, about how to do it.

One of the most important things to do if you're going to be doing a middle ear flush is to get a culture. So when you're culturing an ear, you generally have two sizes of swabs – the really big ones and the tiny, little ones. You can see them in the upper left hand corner. I've dyed the cotton blue so that you can see the size. The blue ones, the big ones, are excellent for when you're culturing the vertical and horizontal canal. They're very difficult and nearly impossible, unless you want to cause a lot of damage to the dog's ear, to get into the middle ear canal. The mini-tip culturettes are best avoided when culturing dogs' canals because you really don't get a lot of material on the surface, but they're absolutely ideal for placing down through your dissecting head otoscope and cone into the middle ear canal, into the middle ear through your little myringotomy slot, and getting some of the exudate.

One technique I like a little better to getting an ear culture – back over here to our thing – is when we make our first little incision into the ear with our tomcat catheter, is to have about two mils of sterile saline on the end of a syringe and flush that into the bulla and then aspirate it out, such as what you see on the bottom here – slide – and remove the debris. And that has a lot of bacteria. It's a great way of getting a culture from it. If for some reason you are unable to submit the fluid for culture, for whatever reason, you can then take your bigger culturette tube and saturate it with this material, squirt some of this material on that, and then put it back into its culture transport tube. That's just something to keep in mind there.

Now, talked about obstruction, undiagnosed infections, middle ear disease. And then the other big trigger for chronic ear disease is an underlying skin disease. The first one is allergic skin diseases, such as allergies to food or environmental allergies, which is the big one causing current inflammation of the ears. That's a contact problem with the pounds and molds, and

obviously where the dog's nose goes his ears follow, and so ears are often infected. And then a primary disorder of keratinization or seborrhea. And we talked about these in the *Itchy Dog* webinar and the *Seborrhea* webinar as two big causes.

So, allergic ear diseases. These are ears typical of dogs with allergic ear disease. You may just have redness and itchy ears. The ears may start to get a little bit lichenified, and lichenification just means sort of thickening. It just looks like sort of elephant skin on the ear. And these dogs, as part of their whole body management for allergic skin disease, have some chronic lifelong therapy for the ears involving cleaning and some anti-inflammatories present. Otherwise, you will just forever have ear disease going on, and if you let it go untreated, these dogs then have this tiny, little incubator of inflammation. There'll be moisture. There'll be bacteria present, and they're set up to get resistant infections. They're set up to get middle ear disease.

And then, of course, there is our primary disorder of cornification. This is a very, very extreme case of primary seborrhea in a cocker spaniel. His face is affected and, of course, the ear is just very, very proliferative. However, it doesn't always present that way. It can be a lot less dramatic. The ear canal can be open, patent, and you can just start getting the little bumps of the ear – they all have names – getting more proliferative. And this is the kind of patient dog you want to identify readily because these are the ones that you can prevent or greatly slow down the risk of having them develop end-stage ear disease.

Okay. So there are some urgent treatment goals when you're dealing with any dog. The first thing is your immediate triage. Do we have end-stage ear disease? Because if you do what you need to *[break in audio]* to

address how to get this dog surgery. In the meantime, while you're trying to do that, hygiene is important and pain management.

If you don't have end-stage ear disease, you want to do something to decrease inflammation, which is going to involve cleaning and glucocorticoids. You want to decrease the mechanical occlusion and swelling. Sometimes that requires oral steroids, maybe a short course or a longer course, depending upon how severe it is – or even topicals. If a dog's ear is really painful, it may be much better to just administer a short course of oral prednisone for several days to bring down the swelling and inflammation in that ear before even trying to clean it, before even trying to do anything more with it, because it can be uncomfortable.

You need to treat microorganisms, which means somehow you have to be able to get a slide sample of it. You want to find out what you need to treat and manage pain. Steroids will do a very good job of managing pain in the ear of swelling, but to a point. Sometimes steroids alone will not manage pain and then you need to add a second drug. And you cannot mix steroids and non-steroidals, so this is where a drug such as Tramadol may be very useful. Obviously, there's problems and concerns with prescribing it, and cautions, but it can be helpful.

And then coat hygiene. This is a close-up of that dog that I showed you, and you can see along the ear margin the hairs are matted. They've gotten so matted that they're kind of turning black and adhering. This is horribly odorous. It does nothing to treat the ear without addressing this kind of ear disease and hygiene. And not only is it on the ear, but when that ear flaps over, it's all over the dog's neck. So it's matted.

These dogs need a really good clip, short clip. Minimally, for the dogs with chronic ear disease, I like to have all the hair shaved off the inside of

the ear, and beneath the ear and along the neck, to make it easier to clean. It makes them much better pets, and the odor is hugely problematic with this dog being a member of a family, having people being willing to treat it, and just, you know, socially.

I mean when your dog's ears stink, it's a problem, and there've been people who have really had dogs that smelled so bad we can smell them when they walk in the front door. And imagine trying to drive in a car with that dog or live with that dog. We need to be able to do something. And, basically, shaving and shampooing are two big things which help a lot.

Okay, so why steroids? Topical steroids alone are great for allergic dogs. They're good for dogs that have got just mild disorders of keratinization. They're used because, in this case, one of the major problems with keeping an ear infection going is the secretions and the swelling. And so the only way to address it is with steroids, so it's one of the few places where we mix steroids and antimicrobials.

Now one of my most commonly prescribed steroids I use is something we call dexamethasone eardrops, and it's equal parts of dexamethasone injectable with propylene glycol. And the prescription usually says put ten drops twice a day for seven days, and once a day for seven days, and then as needed. Well, ten drops is what is required to put on our pharmacy prescription because pharmacists are very into precision dosing. The reality is this is a squirt, and this is very inexpensive to make. You don't have to get it into the actual ear orifice itself. If you can just even just fold the pinna up like a funnel and squirt it into that and let it gently drizzle down into the ear. And it's quite effective that way – and, again, very inexpensive.

Combination products. There's a wide number of them available, but they uniformly have an antibacterial, an antifungal, and some type of steroid there. Injectable steroids. I have used injectable steroids, short-acting injectable steroids, in dogs that cannot be medicated orally because of any number of reasons. Oftentimes, the dogs are too painful. Maybe the owners can't do it. So you can administer several days of that, and that will be very, very helpful to some dogs. You're in a situation where maybe there isn't someone to medicate the dog over the weekend, take care of them but not necessarily medicate them, or the dog is difficult to medicate. A dose for 72 hours may be very helpful and dexamethasone is very helpful there. Then, again, oral steroids that we've talked about.

So you want to go with the least amount of steroids you need, so think, "Is this amenable to topical therapy?" But if not, then let's go with a more potent administration method such as oral steroid. And it doesn't have to be very long. The only time it's long is when you're trying to really shrink ear tissue.

Then as far as reducing mechanical occlusion or ear cleaning, the first question is is sedation necessary, and if the dog has mildly, a little bit dirty ears, kind of like just plain dirty ears, probably sedation isn't necessary unless the dog really objects to being handled. Otherwise, sedation is really very humane because this is painful. When dogs are under anesthesia and we're cleaning and manipulating their ears, we can have them essentially wake up from the anesthesia if they're not kept in a deep surgical plane. So it's not light anesthesia.

They need a fair degree of sedation and anesthesia when you really have to clean an aggressive ear. You need to make sure that you do that. Sometimes you can use less sedation if you can pre-medicate with pain meds, but to the veterinarians in the office and the audience, I know that

you probably have a good handle on what you need to do, but, again, I think it's really necessary. Cleaning ears without sedation is what makes dogs very fearful of veterinarians.

So when you put an ear cleaner in, it's important to instill it and allow it to work. Now, many times people overuse ear cleaners because they're trying to use the ear cleaner to get all the debris off the ear and everything. So it might be really helpful, when you have a dog with really bad ears, to go ahead and instill the ear cleaner and then just do a whole body grooming and bathing to remove all the debris. And then towel the dog off, maybe instill a little bit more ear cleaner to help allow it to work. It takes about five to ten minutes to work, and gently massage it into the ear to do it. If you just squirt it in, then wipe it out, you might as well be squirting in water, because it's not going to work. It doesn't allow it to go ahead and lift off the debris and lift off the oils and exudate from the ear.

And then just gently mechanical removal of debris. Ear swabs for in between all the outside little cracks and crevices of the ear are fine. Within the ear canal there's too much danger that you can pack materials in there or accidentally pack materials in there and, if the ear drum is very, very pliable, maybe rupture it. In severe ear disease, oftentimes the ear drum – you know, when we get down to looking at the ear panel after some cleaning, we'll see it ruptured. We don't know if it was ruptured to begin with or ruptured during the ear cleaning. But you really want to avoid doing that with routine ear cleaning or doing a lot of aggressive cleaning of the ears, because it is quite uncomfortable and it can bruise the ear and cause damage where you didn't have any.

Then you want to clean and massage. And then always apply some otic steroids post cleaning. Now everybody has different things that they like to do and use for ear cleaners. However, these products are not

appropriate for ear cleaning. Hydrogen peroxide is inactivated in the presence of pus, so it's useless. Rubbing alcohol is extraordinarily painful and toxic to tissue.

There seems to be a lot of kind of just chat rooms and discussions about using various oils in the ears for ear cleaning and routine ear cleaning. These are best avoided because many of these oils, if you look them up, they're used as part of the growth media for yeast. So this is where you don't really want to be adding oil to the ears because you might actually be perpetuating the growth of Malassezia. So they're a no.

After that, there's a lot of products available and use what you like and what seems to work for you. If you're worried about ears – you know, ototoxicity or any kind of inflammation – use your ear cleaner and just flush out the ear cleaner. So after you clean it, remove it, use sterile water to flush it out, and you aspirate it out to kind of dilute it.

Now, as far as like removing mechanical materials, something I really like a lot better than alligator forceps, and these are great for grabbing something, is pediatric ear curettes, and you can use them to gently scrape material off of the ears in place of trying to dig it out with a swab. The tips are very bendable. These are very inexpensive; these are very, very soft. And you can just Google them and find them quite easily, and I think they're definitely worth it. They're use once and toss, so that makes it very sanitary.

Now, many times a question I get is "Do you like using ear bulbs?" like people for cleaning ears or children's nose, the little bulb syringes. Well, if they're brand new out of a package and you use them once on a patient, then you throw them away, great. Otherwise, no, because in the left hand picture there are so many things wrong there. First of all, the person's not

wearing gloves. To compound it, they're apparently appears to be some kind of an injury on their hand and there's a Band-Aid on it. That ear, who knows what is growing in that ear? We don't want to be having infections get into our hands, so you need to always wear gloves with ears. That ear bulb? That particular ear bulb, when we went to culture it, after trying to clean it with soap and water and trying to clean it with an alcohol disinfectant, we were still able to grow these bacteria that you see on the plate on the right hand side. And that bacteria matched exactly what was in that dog's ear. So it is very, very high risk to reuse those bulb syringes.

And, also, another thing which gets easily contaminated are the otoscopic cones that you wash. I would recommend using disposable otoscopic cones. They're very inexpensive to use. And also make sure that the tip of the bottle does not touch the ear tissue at all because you can contaminate an entire bottle of ear cleaner that way, and then you're sort of like the Typhoid Ear Mary person.

Okay, so in treating microorganisms, what do you do? Well, routine cleaning. You know, if you've got problems, use products with Tris buffered EDTA. What is that? That is a solution which helps make the walls of bacteria more friable and more susceptible to antimicrobials that would be put in the ears. So use ear cleaners with that. It's a great aid. Use your topical combination products with the steroids. If you have a severe otitis media, a severe otitis externa, you'll need systemic antimicrobials. You'll ___ antibiotics based upon cultures and susceptibility. If it's chronic because of the high resistance, ___ resistant staph and Pseudomonases, I don't recommend the use of fluoroquinolones except based upon a ___ culture and susceptibility.

You need to monitor your patients with exams and cytologies. If you're repeatedly – if you're treating the animal appropriately but yet you're

getting nowhere – you still have pus, you still have bacteria – you might have to move to the next step. Maybe you didn't do middle ear irrigation. Maybe that's needed. Maybe you've done all that and you still have the infection. Maybe it's time for surgery.

Okay. Addressing the underlying trigger is huge. Is it treatable and curable, such as ear mites? Foreign bodies, allergies, or underlying primary disorder of keratinization or seborrhea – you'll treat the ears, but you're not going to get anywhere unless the rest of the dog's problems are addressed. And you can stabilize these patients and make your observations known so when they're adopters get them, they can have something to follow up on.

So the question is where are foster families needed and how do we help these dogs, get them into homes. Well, the first place I think is, if total ear canal ablations or TECA surgeries are available to you, it is the post-surgical care of these dogs. And these dogs do take a fair amount of time, but it is not so time intensive that you can't put them in a foster home. Some of the things would be to have several of the Elizabethan collars there because, during the first couple days of treatment, there's drains in there and there's a lot of exudate and it's hard to keep those clean. So you can have several of them and just clean the dog bite and wound and put a fresh collar on maybe twice a day if needed.

They need pain medication. Usually after about 48 to 72 hours, I'm really surprised that they're just running around like – they just had major ear surgery and they're just hugely playful. But it's really more the exudate, the swelling. And when can they leave foster families? They can leave the foster family when the drain comes and when there's no more exudate there, and that can be as short as a week to ten days. And then they can go on their way to a permanent and loving home.

The acute management of seborrheic otitis, where we're needing to give doses, oral doses of steroids for 15 to 30 days, also those dogs need a lot of shampoo therapy to help get their whole body in remission because it's not going to be just left to the ears. That's the acute management there. And, again, those dogs drink a lot. They urinate a lot. They eat a lot. There could be personality changes with the steroids, so you want them in a situation where they can be watched really, really closely.

During the *Itchy Dog* workup for dogs with allergies, we talked before in the previous webinar about the triage for that, but that can be done. Those six weeks of triage can be done in a foster family setting. And acute management into remission of diagnosed allergic otitis – you got a dog with allergies; the dog is really, really itchy and painful. Maybe this dog needs _____ steroids and this dog needs more aggressive treatment. That works and not very long.

Post myringotomy/middle ear flush, the complications of myringotomy. Well, besides being painful, you can have a temporary and sometimes, unfortunately, permanent head tilt. Some dogs will have vestibular signs afterwards. Sometimes they'll have some blood or exudate draining from the ear. These dogs frequently need some type of medication administered not only orally but topically. And this is probably best done in a home situation, and it's not impossible to do.

Treatment of dogs with Pseudomonas ear infection. Again, you need to choose your foster family carefully. I wouldn't want to place a dog with a Pseudomonas ear infection in a home where there's someone that's immunocompromised or even with children, because these dogs are painful and they're somewhat grumpy. And, also, if you've got a severe Pseudomonas infection, although we don't really see this as a zoonotic

disease, there are times when it's just best not to place some animals in homes with children.

Okay. I think that brings me to the end of my session, and I'm happy to turn it back over to Lynne.

Lynne Fridley: Yes. Well, we're not finished yet, Dr. Moriello. We have some really good questions for you, so we'll go on ahead and get the first one up. Are there otitis cases in which you recommend oral antibiotics in addition to topicals?

Dr. Karen Moriello: Yes. I'm glad you asked that question. When a dog has neutrophil septic and you have neutrophils exudate and the ear canal is extremely painful, I recommend both oral and topicals, because oral antibiotics will make it into that tissue. Because if it's ulcerated and there's neutrophils there, you've got clearly a break in the skin defense of the ear, and that will significantly shorten the course of the otitis and speed resolution of it.

Lynne Fridley: Great. Thank you. And here's the next question. Do you recommend once a day or twice a day cleaning and medicating for uncomplicated otitis? Does the recommendation change for complicated otitis cases?

Dr. Karen Moriello: Okay. I think that when we're talking about ear cleaning, when you have got the acute disease, once a day is more than adequate, and that should be at a time when everybody has time. And regarding complicated otitis, cleaning the ears once a day is more than adequate. However, I know that these dogs can oftentimes build up a lot of exudate on the outer ear, and so that's where a washcloth can be used to remove the debris from there.

The question always comes up with – and it's probably maybe my next question – when do you go from once a day ear cleaning to less than that?

As the debris decreases, you can decrease the frequently of cleaning. What I feel, when you're cleaning the ears of dogs with severe otitis, it is better to do frequent but very gentle cleanings than be real aggressive, because you can damage the tissue. The analogy I make is removing the finish from a fine piece of furniture. It's better to do it very gently and over a period of time than to get very aggressive, because you can cause more harm. And since you have to manipulate these dogs, you don't want it to be painful. And so you want to start cleaning the ears when they can easily be managed. Next question.

Lynne Fridley: Okay. Thank you. Do you use – I'm sorry, do you use dexamethasone or dex SP? Where can you get propylene glycol?

Dr. Karen Moriello: Okay. I'm not sure what dex SP is, but the dexamethasone I'm using is injectable dexamethasone. I'm not using – oh, I know, sodium. I'm using the injectable, not the shock dose, not the sodium succinate, so just usually the equine product. And propylene glycol, that can be purchased. I would talk to your distributors because it comes in bulk, so any of your drug distributors should be able to help you find a source of propylene glycol. It's a carrier base and it's very commonly used in most ear products.

Lynne Fridley: Okay. Thank you. Here's the next one. Do you have success managing aural hematomas with a course of prednisone instead of surgery?

Dr. Karen Moriello: Okay. Management. Those are the ear hematomas with prednisone instead of surgery. Sometimes. Now, with an aural hematoma, it will resolve on its own. It's painful for the dog and they will flop around and have their ear held at a funny angle for a long time, and it can take a long time for the blood to re-absorb, and then it leaves a very bad – it's very un-cosmetic. However, you will meet dogs that have had nose surgery and had to do it.

When you're using glucocorticoids instead of surgery – the best option is surgery for them. That'll give you the most cosmetic effect and it gives you the best chance of getting the problem solved in the shortest period of time. But there are times when surgery's not an option. When you're using pred, what you need to do is evacuate and remove the blood that's in the ear, and I've seen people do a couple of different things. They'll inject steroids into the ear or administer oral steroids.

The problem with using the steroids injectably is it decreases the inflammation, but because there's a space there, it's going to fill up with blood right away. Oral steroids usually are working because the dog is itchy and it has allergic ear disease, so when you're using oral steroids and you're having success, most likely what is happening is the dog's itchy – it's stopping its itching of its ear. You evacuate the aural hematoma. Maybe you bandage it somehow so that there's pressure on it. And then that makes the dog comfortable. He doesn't flap his ear and he doesn't – and the aural hematoma doesn't recur.

I don't like the T canals for perpetual drainage very much, because what you have then is blood dripping into the vertical ear canal. Somehow it always gets in there. And, essentially, just remember what do you grow bacteria on? Blood agar plates. So that can be really complicating and you can go from an aural hematoma to a resistant or complicated infection. I'm done.

Lynne Fridley: The next question: when is a bulla osteotomy indicated?

Dr. Karen Moriello: And that's a bulla osteotomy. So if you remember –

Lynne Fridley: Osteotomy.

Dr. Karen Moriello: Yeah, that's okay. If you can remember back to the picture where we had the –

Dr. Karen Moriello: Okay. What we're talking about with a bulla osteotomy is, on the left hand side there, there's that opening there. And what a bulla osteotomy is, for those who don't know, it is where you go in and open up this bulla with some bone curettes and scrape out the contents. That would be indicated – it always happens during a total ear canal ablation. It would happen when there is a tumor there, to remove it.

And maybe the treatment course, if the dog has middle ear disease, we've been unable to resolve it with flushing, and the material is packed or inspissated – thickened and dried in there so hard that the only way to get is to curette it out. And that procedure then is ___ the dog. It eventually heals over, but there's usually a drain there present for a period of time. So those are my indications.

Lynne Fridley: Excellent. Here we go with another question. Do you find more or less ear problems with cropped ears?

Dr. Karen Moriello: Oh, I wish I could really answer that question, but I just don't see that many dogs with cropped ears anymore. That seems to not be very popular in the Midwest here. So the question would be is – you know, the assumption is does removing the floppy ear part prevent the dog from having ear disease. Well, ear disease – in the dogs that get their ears cropped for cosmetic reasons or for use reasons, if they're predisposed to an underlying skin disease, it will do no difference at all. You will still have ear disease there. So it is not a way of preventing ear disease in a dog which is programmed to have it because they have allergies or

primary seborrhea. So if someone's asking me is it a good indication to prevent ear disease, I would say no.

The problems with cropped ears that we do see is, essentially, non healing. Cropped ears – you know, because the ear tissue doesn't have the cartilage, it's difficult to get that to heal. So that might be one problem with it. But that practice is less and less common.

Lynne Fridley: Very good. Here's another question. What is the shelf life of dexamethasone injectable mixed with propylene glycol? Can it be kept at room temperature once mixed, and for how long, in your experience?

Dr. Karen Moriello: Okay. The shelf life. Every pharmacist will put an expiration date on it. I am not aware that it expires at any period of time. I would probably not keep it for more than – I would mix it up in small amounts and keep it for approximately six months I think a bigger potential risk is just that the tip may get contaminated. And lots of times, because it's sort of an oily solution, the label falls off of it and then you don't know "Do I have dexameth? What do I have in this bottle?" So six months at the most. Yes, it can be kept at room temperature and, like I said, for six months.

Lynne Fridley: Good. Thank you. Here's another. What is it when the inside of the ear appears fuzzy gray and it occurs every few months and needs to be cleaned out, usually accompanied by dark debris, and then treated with topical treatment drops or ointment?

Dr. Karen Moriello: When you have any kind of inflammation happening every few months and then dark debris, that to me suggests two things: you've got a lot of buildup of ceruminous material, the normal cerumen that may or may not have yeast in there, and that what appears to be that kind of fuzzy gray material may very well be a dog with mild seborrheic otitis present. And

then having it respond to drops or ointments is really indicative that there's a chronic underlying disease.

So one way to kind of get out of the cycle would be, once you get the ears in remission, get that patient, that dog, on a treatment or a protocol for routine ear cleaning once or twice a week, followed by some topical steroid eardrops once or twice a week. Then look at the big picture of the dog and think, well, what's causing this and what else do I do more. But even in dogs with well controlled atopy or seborrhea, they need lifelong maintenance therapy on their ears. There's just no if, ands, or buts about it. The only thing that changes is sometimes it's once a week and sometimes it's twice a week. Okay.

Lynne Fridley: Okay. Can you describe how you do ear cytology? Do you always use Diff-Quick stain?

Dr. Karen Moriello: Okay. So, doing ear cytology, take a dry, cotton-tip applicator. I pick the ear up and I will flip it over the dog. I try not to pull it back too much because it's painful. Get a fair amount of debris on there, gently rolling it into the ear canal, so the entire 360 of the swab is coated. And that's also very important when you're getting your cultures. And then I just roll it repeatedly in linear lines on a glass slide, using the frosted side up. The optics for glass slides that have a frosted end, it is meant to put the sample on the frosted side. So if you've ever done cytology and you can't find it or can't focus and you've got frosted slides, you've put it on the wrong slide.

Then it is not necessary to flame these slides. As a matter of fact, it's better not to because flaming them – with a match or lighter – will damage the cellular integrity of the cells, so it makes it – it kind of cooks them, so it makes it hard to see what they are, and then it adds soot to the bottom of

the glass slide, which you can't see. So I don't do that. It's not necessary to do that. There's studies that back it up to not do that.

And then I will put it in – and I use Diff-Quick. The most important thing when you're doing your Diff-Quick stains is to spend a little bit more time in the blue stain to do that, because the organisms that you're staining have a lot of protein in them, and that's what the blue will pick up, is the protein. And then I'll rinse it – not in tap water. It's important to use distilled water. If you're having problems with streaking of your slide, that is because you're using tap water. So just use distilled water and let them air dry and then examine them first at 4X, then at 10X, and then at 100X or oil. I'm done.

Lynne Fridley: Thank you. Would you see Demodex on the ear slide before you see clinical signs such as hair loss?

Dr. Karen Moriello: Yes. Yes, you can. And sometimes these dogs just come in with kind of itchy ears, and we find the mites on the ear swabs, and then we may look a little bit closer at the dog, and then just do a lot more random pluckings. Before you see hair loss, you oftentimes see red, erythema. And so we'll pluck in those areas and then we'll find Demodex. So, yes, that's definitely a possibility. So it is time and money well spent.

Lynne Fridley: Thank you. And we'll take this as our last question, Dr. Moriello. Do you recommend routine cleaning of more than the pinna?

Dr. Karen Moriello: More than the pinna. So I'm assuming that it's just the outer pinna, and then – well, probably the question is asking do you want to clean like the pipes under the sink. If your dog has ear disease, you definitely need to clean the outside of the pinna, the inner pinna, and the canals. If you have a dog with no ear disease whatsoever, then all you need to do is clean

wherever your little washcloth can go on the ear and in your finger. You don't need to go ahead and get in any – try to get into the vertical canal or the horizontal ear canal. Hopefully that answered that question.

Lynne Fridley: Yes. Thank you. Well, that ends our event tonight. We want to thank Dr. Moriello and all of you for your time. We invite you to take a few minutes to complete our survey. Your feedback is important to us. Click on the link on your screen. If for some reason you don't see it, it is also in the Resource file at the bottom of your screen, and the link will be e-mailed to you in a few days. This webcast will be available on demand shortly, and we hope you'll share this presentation on your social sites.

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