

JOURNAL

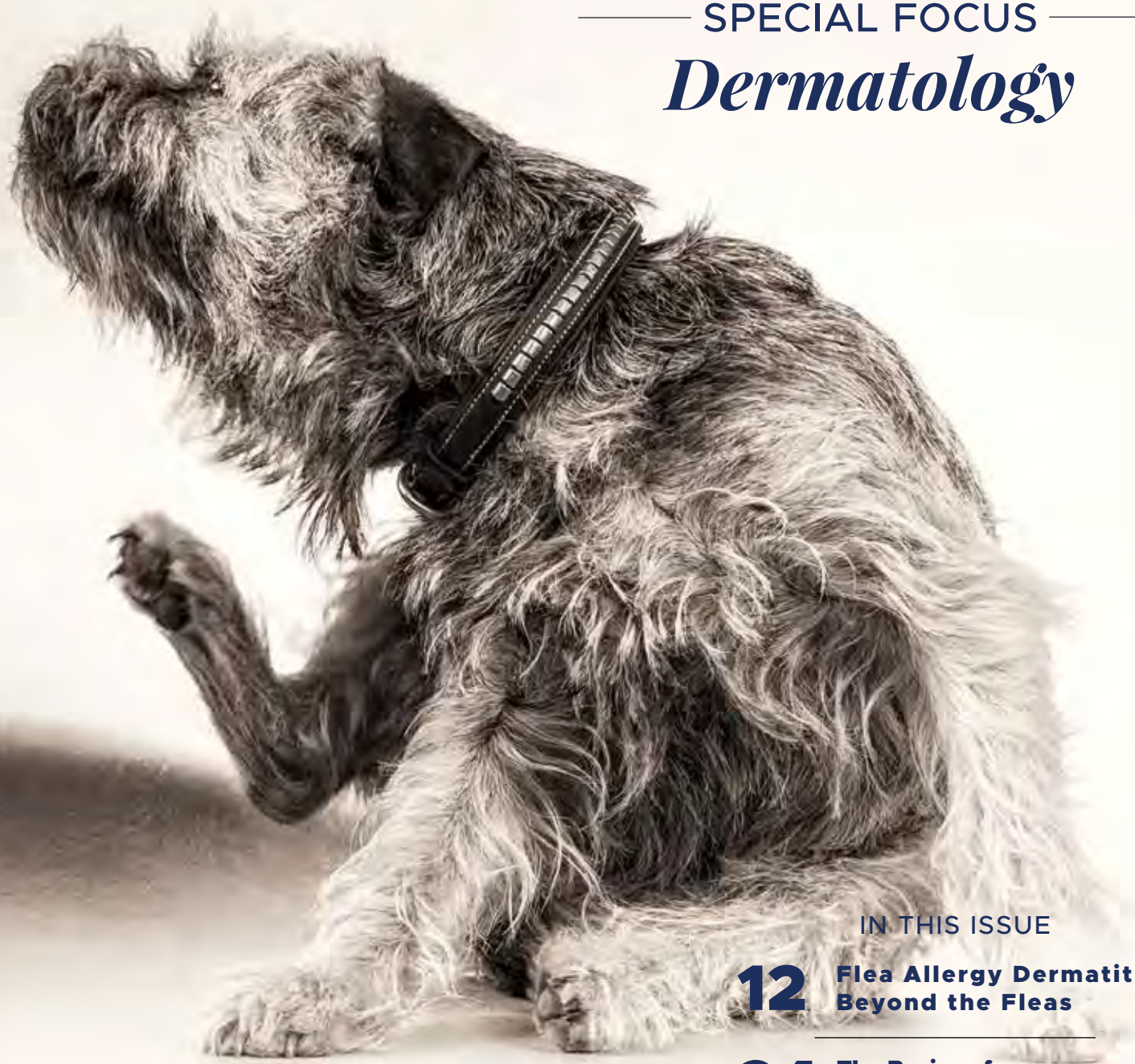


April/May
2018

VETERINARY NURSING IN ACTION

— SPECIAL FOCUS —

Dermatology



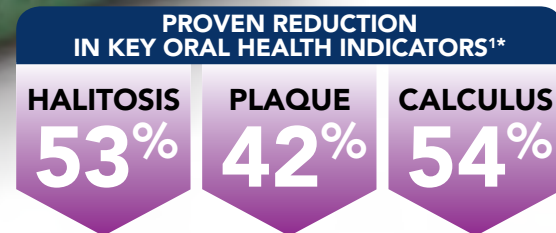
IN THIS ISSUE

12 Flea Allergy Dermatitis:
Beyond the Fleas

24 The Basics of
Canine Atopy

38 Diagnostic Methods for the
Dermatology Patient

CONTENTS



Defend against plaque, calculus, and halitosis



Fight the source of oral health problems with the science of delmopinol.



The only chews with the power of delmopinol, **ORAVET**[®] Dental Hygiene Chews create a barrier against bacterial attachment—and when bacteria can't attach, they can't produce plaque biofilms or the volatile sulfur compounds of halitosis. **ORAVET** Dental Hygiene Chews have been proven effective in multiple canine trials, including "clean mouth" and "dirty mouth" studies.^{1,2} They are also highly palatable,¹ and the scrubbing action of the chew works in parallel with delmopinol to remove existing plaque and calculus. For full study results, contact your sales representative or visit oravet.com.

^{*}Compared with dogs receiving dry diet alone
References: 1. Data on file. 2. Data on file.

ORAVET Dental Hygiene Chews are a Merial product.



Merial is now part of Boehringer Ingelheim. ORAVET[®] and SERIOUS ORAL CARE MADE SIMPLE[®] are registered trademarks of Merial. All other trademarks are the property of their respective owners. ©2018 Merial, Inc. Duluth, GA. All rights reserved. OVC17TRADEAD (02/18).



20



37



49

IN THIS ISSUE

NAVTA NEWS

- 3 NAVTA Executive Board Report
- 4 State Association Updates
- 6 Student Chapter Updates
- 9 Specialty Updates

SPECIAL FEATURES

- 20 Current Conversations: Alleviating Stress in Emergency and Critical Care Patients

VETERINARY NURSING EDUCATION

- 12 Flea Allergy Dermatitis: Beyond the Fleas
- 24 The Basics of Canine Atopy
- 49 Diagnosing Adverse Food Reactions

VETERINARY ASSISTANT EDUCATION

- 38 Diagnostic Methods for the Dermatology Patient

CASE STUDIES

- 30 Ellie the Arabian Mare: Two Hospitalizations. Three Days. Two Completely Different Health Problems.

HEAD TO TALE WITH STEVE DALE

- 36 Celebrating the Winn Feline Foundation

PROFESSIONAL PULSE

- 47 Veterinary Support Staff Unleashed

On the cover:

Itchy dogs are difficult cases to diagnose and manage for the veterinary team. Owners quickly become frustrated because their pet is uncomfortable. Be sure to spend time communicating and following up with pet owners and help them overcome those frustrations.

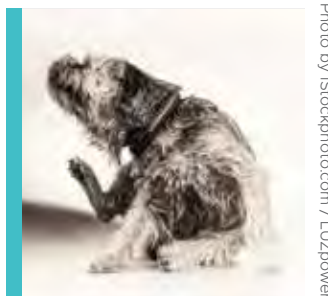


Photo by: iStockphoto.com / LUZpower

vetlexicon highlights

Apr/May 2018



canis

Decubital ulcers

Decubital ulcers can be classified into Grades I-IV which are determined by the depth of injury to tissues overlying the bony prominence/prominences.

This topic has been written by Gillian Calvo BSc(Hons) DipAVN DipHE CVN CCRP RVN

To view the full article visit www.vetstream.com/treat/canis and search for 'decubital'



Decubital ulcers: limb/head supports 02
©Gillian Calvo



felis

Birman cat neutrophil granulation anomaly

This condition is caused by an autosomal recessive hereditary abnormality resulting in increased granularity of the cytoplasm of abnormal neutrophils that resemble the cytoplasm of immature cells.

This topic has been written by Rachel Korman BVSc MANZCVS

To view the full article visit www.vetstream.com/treat/felis and search for 'birman'



Birman
©Alan Robinson



lapis

Ocular hyperemia

Hyperemia (red eye) is a common presenting sign in the rabbit. Increased blood flow to the conjunctival, episcleral or ciliary blood vessels, or intraocular hemorrhage can result in hyperemia.

This topic has been updated by Vicki Baldrey BVSc BSc DZooMed(Avian) MRCVS

To view the full article visit www.vetstream.com/treat/lapis and search for 'hyperemia'



Abscess O9: retrobulbar - exophthalmos
©David L Williams



exotis

Alopecia

Alopecia is the most common clinical sign in guinea pigs with dermatologic disease. Any disease process that affects hair follicles can lead to hair loss, eg pruritus, deep pyoderma, ectoparasites, dermatophytosis, allergens, neoplasia, endocrine disease, poor overall health.

This topic has been written by Cathy Johnson-Delaney DVM

To view the full article www.vetstream.com/treat/exotis and search for 'alopecia'



Alopecia: hyperthyroidism
©Avian and Exotic Animal Clinic



equis

Photodynamic therapy

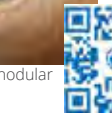
PDT is a promising method of treating superficial squamous cell carcinomas (SCC) that is non-invasive, provides good cosmesis and carries minimal risk of toxicity. It may also be a useful adjunctive treatment for small sarcoids, especially following surgical removal.

This topic has been reviewed by Anna Hollis BVetMed DipECEIM DipACVIM MRCVS

To view the full article visit www.vetstream.com/treat/equis and search for 'photodynamic'



Eye: sarcoid - fibroblastic and nodular
©Anna Hollis



NAVTA
National Association of Veterinary Technicians in America

Special Membership benefit for NAVTA Members:

Obtain your no obligation 30 day FREE trial via www.vetstream.com/register/NAVTA30 or use this QR code.



You will then also be registered for the preferential pricing for NAVTA members



NAVTA

1931 N. Meacham Road
Schaumburg, IL 60173
info@navta.net | www.navta.net

2017 NAVTA EXECUTIVE BOARD

President:

Kara M. Burns, MS, MEd, LVT, VTS (Nutrition), VTS-H (Internal Medicine, Dentistry)

President Elect:

Erin A. Spencer, M.Ed., CVT, VTS (ECC)

Secretary:

Beckie Mossor, RVT

Treasurer:

Michelle D. Krasicki Aune, MBA, BS, CVT

Member at Large:

Kenichiro Yagi, MS, RVT, VTS (ECC), VTS (SAIM)

Member at Large:

Elizabeth (Beth) Green, RVT

Past President:

Mary Berg, BS, RLATG, RVT, VTS (Dentistry)

COMMITTEE CHAIRS

NAVTA Booth Representative:

Virginia Rudd, CVT, RVT

NAVTA CE Committee:

Vicky Ograin, MBA, RVT, VTS (Nutrition)

NAVTA CVTS Committee:

Ed Carlson, CVT, VTS (Nutrition)

NAVTA Global Outreach Committee:

Ken Yagi, BS, RVT, VTS (ECC, SAIM)

and Linda Markland, RVT

NAVTA Membership Committee:

Jaime Rauscher, RVT

NAVTA National Credential and Title Change Task Force:

Ken Yagi, BS, RVT, VTS (ECC, SAIM)

and Heather Prendergast, RVT, CVPM, SPHR

NAVTA Public Relations Committee:

Jade Valasquez, LVT

NAVTA SCNAVTA Committee:

Beckie Mossor, RVT

NAVTA State Representative Committee:

Ken Yagi, BS, RVT, VTS (ECC, SAIM)

NAVTA Veterinary Assistant Committee:

Dennis Lopez, M.Ed, B.SCI, LVT

THE NAVTA JOURNAL

Editor in Chief & Website Coordinator

Heather Prendergast, RVT, CVPM, SPHR

Associate Editor in Chief

Kara Burns, MS, M.Ed., LVT, VTS (Nutrition)

Editorial Board

Katie Larsen, DVM

Rachel Lutz

Betsy Hensley, CVT

Pat Telschow, BS, LVT

Design

Pop! Creative Design | popdesigned.com

Printing and Fulfillment

NextPage | gonextpage.com

Opinions and statements in *The NAVTA Journal* are those of the authors and not those of NAVTA, unless so stated. NAVTA assumes no responsibility for, and does not warrant the accuracy or appropriateness of, recommendations or opinions of the authors or of any product, service, or technique referred to in *The NAVTA Journal*. Published advertisements in *The NAVTA Journal* are not an endorsement of any product or service.

NAVTA EXECUTIVE BOARD REPORT

FROM THE
EDITOR

*It's springtime...
and allergies are in the air.*

Spring time is upon us, providing the perfect opportunity to discuss dermatology related diagnoses.

This issue focuses on one of the most frustrating components of veterinary medicine—for clients, veterinary team members, and of course, the patients themselves. Flea Allergy Dermatitis, Canine Atopy, and Adverse Food Reactions are complicated and difficult for owners to understand WHY these are difficult to diagnose and treat. Take the time to explain to owners the WHAT and the WHY behind accurate diagnostic testing and treatment protocols. Be up front and honest about the difficult process; your owners will appreciate the honesty and will likely be more compliant of the recommendations you make.

In this issue, we're proud to introduce a new, special column by Steve Dale. *Head to Tale with Steve Dale* will feature topics that are important to the Veterinary Technician/Nurse profession in each of the upcoming issues of the NAVTA Journal. Steve is a tremendous advocate for the profession and sits on a variety of veterinary related boards, allowing him to learn and communicate perspectives from several angles. The NAVTA Journal

is excited to work with Steve, who's featuring the Winn Foundation in this issue, an organization that has contributed to the health and welfare of cats for over 50 years.

Also in this issue, *Veterinary Support Staff Unleashed* focuses on the power of education. Be sure to read inspiring quotes from those who have had their passion reignited! We at NAVTA are also reignited each time we visit a conference. It has been wonderful to visit with members that have stopped by the booth at both VMX and WVC, and look forward to seeing you at the WVC Veterinary Technician Symposium in June (<https://www.wvc.org/vts/>), and at AVMA in July (<https://www.avma.org/Events/Convention/Pages/default.aspx>)!

Heather Prendergast,
RVT, CVPM, SPHR
The NAVTA Journal Editor in Chief

Kara Burns, MS, Med,
LVT, VTS (Nutrition)
NAVTA President



definitive veterinary intelligence

www.vetstream.com



NAVTA have partnered with Vetstream to offer Vetlexicon at highly preferential prices for NAVTA members. As a member of NAVTA you are entitled to a no obligation FREE 30 days trial to the Vetstream Vetlexicon services, comprising of Canis, Felis, Lapis, Exotis and Equis. All you need to do is register on <https://www.vetstream.com/register/NAVTA30> and you will then have 30 days access to more than 21,000 text articles, images, tables etc from more than 900 of the world's leading clinicians.

As a NAVTA member, you are also eligible for a discount off the subscription price of any of the services. We will contact you during your trial to give you further details.

Vetstream Ltd, Three Hills Farm, Bartlow, Cambridge CB21 4EN, UK. Tel: +44(0)1223 895818 Email: enquiries@vetstream.com

Alaska Veterinary Technician Association

The Alaska Veterinary Technician Association has been hard at work putting the final touches on the technician track for the Alaska Veterinary Medical Association state meeting in October. This year marks the first year the AKVMA will be selecting the technician track. We are looking forward to having Jusmeen Sarkar, DVM, MS, DACVA, spend an entire afternoon discussing anesthesia topics. We are also looking forward to hearing lectures on toxicology from Rebecca Walker, LVT, BS, VTS (Clinical Practice-Canine/Feline).

We are working hard on continuing to offer quarterly RACE approved CE. Recently we had the opportunity to have Dr.

This year marks the first year the AKVMA will be selecting the technician track.

Adolf Maas, DVM, DABVP (R&A), CertAqV, talk to members about advancements in anesthesia and the use of Alfaxan. Next month we will host a webinar to reach all members and other interested veterinary professionals across the state given by Donna Sisak, CVT, LVT, VTS (Anesthesia/Analgesia). Donna will be discussing opioid restrictions and alternatives when creating anesthetic protocols.

— Gia M. Kayl, LVT, NAVTA State Rep



Veterinary Health Care Team of Arizona (VHCTAz)

Veterinary Health Care Team of Arizona's technicians are hard at work elevating their level of expertise in knowledge base and client services to offer both pets and their owners satisfying experiences. They have been participating in many continuing education sessions offered by VHCTAz covering topics such as perfecting dental prophylaxis techniques, positioning for dental radiology, treating hypothermia & fever, and recognizing and managing shock. In addition, team members have been gathering over the past few months in an effort to create the Ultimate Client Experience during a four-part series expanding upon topics of communicating effectively, discussing financials with clients, working as a team, and the many career pathways to explore in veterinary medicine.

VHCTAz continues to offer informal quarterly gatherings designed to provide technicians an opportunity to connect and collaborate. On March 13, technicians gathered from across the valley to discuss ongoing legislative measures involving opioids and the general public, the Veterinary Nurse Initiative, and additional local matters.

VHCTAz proudly continues to offer programs designed specifically for veterinary staff members.

— Courtney Waxman, CVT, VTS(ECC)
NAVTA Arizona State Representative
VHCTAz Leadership Committee,
Technicians Chair

Massachusetts Veterinary Technician Association

Elections are over and our new board is settling nicely into their new roles! We've already had our first two meetings and we are very excited to see where our organization will take us this year! The most recent board meeting focused on strategic planning for our organization. We are ready to work hard to continue to make this the best technician association for our members!

Our past president, Erin Spencer has been working closely with our lobbyist trying to get our mandatory licensing in Massachusetts.

We are always looking for volunteers not only for help with the legislation but with all aspects of the MVTA. If you are interested in helping please email us at csec@massvta.org

Our conference will be held October 14th, 2018 at the Sturbridge Host Hotel in Sturbridge, Massachusetts. Registration is now open.

Due to the success and growth of our annual fall conference, we are moving locations. Our conference will now be held in Sturbridge, Massachusetts at the Sturbridge Host Hotel. The date will be October 14th, 2018 and registration is now open. The education tracks include behavior and anesthesia.

We are also hosting our 3rd annual day of CE on Cape Cod, March 11th, 2018. Topics include Transfusion Medicine, Cytology in Practice and PCR.

The MVTA is offering 3 grants. Two to a CVT, and one to a student member for \$1,500 each.

Additional information on the grants and CE events can be found on our website at www.massvta.org.

— Robyn Townsend, CVT
NAVTA State Representative

Missouri Veterinary Technicians Association

The Missouri Veterinary Technicians Association (MVTA) attended the 2018 MVMA Convention in Columbia, Missouri in January. There were around 35 technicians and practice staff registered for this event. The MVMA offered a lot of great topics for continuing education. This year we hosted a booth in the exhibit hall and had many people stop by. There were a few veterinarians that mentioned they were having trouble finding registered technicians for their practices. So there are several positions available out there! MVTA also hosted a technician reception that included a speaker and snacks. We presented the Veterinary Technician of the Year Award at this reception. This year's winner was our speaker, Robyn Keiter, CVT. Robyn has done a lot of work with emergency response and has been helping train emergency personnel in the area of Animal Search and Rescue. During the technician reception Robyn discussed her experiences as a responder and how technicians and veterinarians can play an important role. If you know a technician that you would like to nominate for the 2018 Veterinary Technician of the Year Award please visit our website for more information www.movta.org.



The annual MVTA CE Conference will be held October 13, 2018 to kick off Vet Tech Week.

Next year the 2019 MVMA convention will again be held in Columbia, Missouri. MVTA will be there with a booth and hosting a technician reception. We hope you see you there!

The annual MVTA CE Conference will be held October 13, 2018 to kick off Vet Tech Week. It will be held at the new Humane Society of Missouri's Buddy Center in Maryland Heights near St. Louis. We will be offering a behind the scenes tour of this beautiful new shelter and will have several speakers talking about everything from infectious diseases to nutrition. Please stay tuned for more details.

Please note: Association membership renewals are due on June 1, 2018.

— Whitney Fahrendorf, RVT
Missouri Veterinary Technicians Association

Ohio Association of Veterinary Technicians

The OAVT is pleased to update you on our adventures in Ohio. It has been a busy winter despite the best Old Man Winter has thrown at us.

The American Association for Laboratory Animal Science recently recognized one of our own cherished board members as the Veterinary Technician of the Year. Crystal Sims, BS, RVT, RLAT, was recognized at a special ceremony at the AALAS yearly convention this past fall in Texas for her dedicated contributions and outstanding support of both veterinary technology and the laboratory science field of medicine. We are so proud of her and are honored to count her as a valued member of our team. Way to go, Crystal!

The Veterinary Nurse Initiative is getting serious in our state. We have been working closely with NAVTA, legislators, and lobbyists in an effort to bring education and support to this important game-changing move to unite technicians across the states. We are excited and honored to be a part of this trailblazing team. Within the next few weeks we will be attending state hearings, giving testimony, showing support, and contacting all local representatives to boost our profession. The forefront of history is here and it is going to be an amazing opportunity for all of us. Stay tuned!

Lastly, the recent Midwest Veterinary Conference was another great success for our association. OAVT had a booth set

up in the exhibit hall again this year where we were able to meet with current and future veterinary technicians to discuss our awesome field, encourage growth in the profession, and uplift spirits as well. New and current members received fun swag for their dedication to the association along with the support system every technician needs. We are so thankful for our devoted, kindhearted technicians and honored to be part of a profession dedicated to helping all creatures, the people who love them, and the science to make it all possible.

— Christie Myers, RVT, VTS
(Clinical Practice – Canine/Feline)
Vice President, Ohio Association
of Veterinary Technicians; State and
District V Representative to NAVTA

The Veterinary Nurse Initiative is getting serious in our state. We have been working closely with NAVTA, legislators, and lobbyists in an effort to bring education and support to this important game-changing move to unite technicians across the states.

Student Chapter Updates

Coastal Alabama Community College SNAVTA

The Coastal Alabama Community College Student chapter of NAVTA partnered with Girl Scouts of America Service Unit 804 for a pet badge day. The veterinary technology students worked with girls ranging from kindergarten to eighth grade to earn different badges. They made beds for pets and donated them to Project Purr, a local cat rescue group, while learning the importance of pet care both at home and at the veterinary practice. Another group of girls learned about local wildlife and built birdhouses and bird feeders for their homes. The older girls learned about pets helping in their community by interviewing owners of service dogs and working dogs, such as police dogs. They ended the day with a great demonstration of how dogs are used in Search and Rescue.

This was so much fun that the SNAVTA members have decided to extend an invitation to do this again for other Girl Scout Service Units in the area. It was a great way to teach young girls about veterinary technology and helped the veterinary technology students learn how to talk to young people. Attached is a picture of the Girl Scouts, some members of CACC SNAVTA, and the animal helpers for the day.



The Coastal Alabama SNAVTA partnered with the Girls Scouts on Pet Badge Day.

— Barbara Robinson, LVT
Coastal Alabama Community College
Veterinary Technician Program Instructor



Left and Middle: The Foothill SNAVTA collected goods for animal needs. Right: Foothill SNAVTA members bottle feed kittens at Petaluma Animal Services Foundation.

Foothill College SNAVTA

Foothill SNAVTA aids in efforts to support the North Bay Fire Victims

When news about the North Bay fires spread across the Bay Area and the nation, donations immediately began rolling in. Within days people were organizing food and clothing drives, fundraisers, and GoFundMe accounts for those who lost everything. The Foothill College Veterinary Technology program, in Los Altos Hills California, was no different. Many of the students began to worry about the pets, shelter animals, and wildlife that had been displaced by these fires, and started coming up with ideas to help.

Members of SNAVTA started doing research on what kind of donations were most needed to help animals. Many shelters, rescue groups, and organizations were called, and the general consensus at the time was that money was the most needed form of donation. So, SNAVTA started a fundraiser to collect money that would be appropriately donated, as well as a collection of goods related to animals that would be needed in a few weeks' time after current resources had run out. Together with their communities, the club members raised more than \$1,500 and amassed over five cars full of goods such as food, bedding, treats, toys, crates and more in just over two weeks.

President of SNAVTA Hannah Greenspan, and club members Lis Pullin, Genevieve Walker, Steph Case, and Danielle Dittman, personally drove to the North Bay area to deliver donations.

First, they were greeted at Petaluma Animal Services Foundation by one of the co-founders of the shelter, Valerie. This shelter is located about 15 miles from the Santa Rosa fire, and was taking in most of the displaced animals from the area. SNAVTA donated \$1,000 along with an abundance of supplies to the foundation. While there, the team received a tour of the facilities from Valerie, and connected to the effects of the disaster on a personal level. They even got to help with the intake of five bottle baby kittens that are now growing to be healthy and strong. The second stop was the Bird Rescue Center in Santa Rosa, where the team delivered a donation of \$350, and got to meet some of the resident birds including an owl and a peregrine falcon.

The passion and motivation of the students in the Foothill Chapter of SNAVTA to help animals contributed greatly to the success of this fundraiser, all driven by the common goal of helping those in need. The students felt a sense of pride and selflessness in their duty to animal welfare. These feelings were further acknowledged when they received a letter from the Petaluma Animal Services Foundation personally thanking SNAVTA for their donations. The letter also came with an invitation for students to come help at the shelter anytime, which will be an opportunity happily taken by these future veterinary technicians.

— Kelsey Hodge



At Petaluma Animal Services Foundation the Foothill SNAVTA got to assist with the intake of five kittens.



Foothill SNAVTA members had the opportunity to meet a Peregrine Falcon at the Bird Rescue Center in Santa Rosa.

Together with their communities, SNAVTA members raised more than \$1,500 and over five cars full of goods such as food, bedding, treats, toys, crates and more.

NAVTA CAREER CENTER

Your Job Search Resource Center

Everything you need to make your resume stand out, ace the interview, advance your career, and navigate the digital world through social media and digital communication



visit www.navta.net



The Academy of Veterinary Surgical Technicians

AVST TECHNICIAN CASE REPORT PRESENTATIONS ACVS SURGICAL SUMMIT IN PHOENIX, ARIZONA, OCTOBER 25-27, 2018

Are you looking for an opportunity to practice speaking at national Continuing Education events? Do you have an interesting surgical case you would like to share? The Academy of Veterinary Surgical Technicians will be hosting the second annual technician case report presentation session at the next ACVS!

SUBMIT YOUR CASE TODAY!

GUIDELINES:

- Open to credentialed technicians (with or without a VTS) with limited speaking experience*
- Case studies are limited to surgical related topics
- Case submissions should include:
 - Author's name, credentials, and contact information
 - Resume or CV (list any prior speaking engagements)
 - The author must play significant role in the surgical case submitted, and state the role performed in the case
 - Initial submissions for consideration must be a 1-2 page report summarizing the case
- Submissions will be reviewed by the AVST ACVS Technician CE committee
- Submissions are due by May 31, 2018 at 11:59 pm EST
- Send submissions as an email attachment to AVSTcasereports@gmail.com
- Any questions should be directed to AVSTcasereports@gmail.com
- 4-5 case reports will be chosen for presentation at the 2018 Surgical Summit in Phoenix, Arizona
- Selected authors must be registered for the 2018 Surgical Summit in order to present their case (registration not provided)
- Selected cases will be presented as 15-minute PowerPoint presentations, concluded with a brief Q&A session, and a critique by judges on the presentation technique
- Judges may consider time, speaking tone, quality of information (and pictures), the technician's role in the case, interest level, and responses to Q&A
- Material should be original and references should be cited
- The winner will be awarded the Joel Woolfson Memorial Scholarship (a \$300 cash award).



**Entries should be from credentialed technicians who are looking for speaking experience. We will not accept entries from technicians that have spoken at national conferences. Local experience, such as in-house presentations, hospital or technician state association sponsored CE events for a local veterinary community or other smaller events are acceptable experience. Please contact us at the email above if you are unsure if your experience may exclude your participation.*

Academy of Internal Medicine Veterinary Technicians

Each spring brings the promise of great things to come, and just like spring, the AIMVT is bringing the promise of great things to come in 2018. For starters, we have an outstanding continuing education opportunity being held in conjunction with the ACVIM forum this June, in picturesque Seattle, Washington. We are all looking forward to a fabulous venue, the exchange of scientific knowledge, and the camaraderie with fellow technicians, and veterinarians. This meeting offers credentialed and non-credentialed technicians the opportunity to participate in workshop/interactive sessions, present case reports to their peers, listen to industry leaders, and attend state-of-the-art lectures. It's a great opportunity

to see old friends and meet new ones! Highlights every year for the AIMVT at this meeting include; the pinning ceremony for the new VTS by their specialty directors at large, technician case report awards, VTS specialty dinners, the annual membership meeting and lastly, the administration of the examination for those applicants that have met the AIMVT credentialing requirements. We acknowledge all the hard work, time and effort the applicants put forth in meeting those requirements and wish them the best

of luck on this year's examination! On that note, The Academy experienced a record number of applicants this past fall, with each specialty reviewing applications! We see this as a very positive sign and look forward to our continued growth. If you're interested in becoming an AIMVT, please check us out at www.aimvt.com, the website has all the information needed to begin your journey to becoming a VTS.

— Debbie Tate, RVT, VTS (oncology)
President, AIMVT

The Academy experienced a record number of applicants this past fall, with each specialty reviewing applications!



Advance your knowledge and skills with the ACADEMY OF DERMATOLOGY VETERINARY TECHNICIANS



**Sandra Grable, AAS, CVT, VTS
(Dermatology) Charter Member
University of Illinois, College of Veterinary Medicine**

The Academy of Dermatology Veterinary Technicians received provisional recognition in 2015 and is dedicated to enabling the accredited veterinary technician the opportunity to advance their knowledge and skills to achieve the goal of becoming a credentialed specialist within the field of Veterinary Dermatology.

Our mission is to promote excellence through specialization in the discipline of veterinary dermatology by demonstrating an advanced proficiency of dermatologic procedures, working with the veterinary team and client to advocate superior patient care and providing cutting-edge continuing education.

AVTS (Dermatology) may be attained not only by the technician working in a specialty dermatology practice; it may also be achieved by an accredited technician working in the general private practice which sees numerous dermatology cases.

Last year, our modest group provided dermatology continuing education sessions across the United States as well as Canada and contributed to peer-reviewed journal and online articles, with more to come in 2018!

We welcome you to visit our website, www.vetdermtech.com, for more information in pursuing a VTS in dermatology or follow us on Facebook. We also have a veterinary dermatology technician listserv which you may apply for on our website. It's a great way to network with your colleagues who share an interest in dermatology, as well as being a great resource for any questions you may have.

North American Veterinary Dermatology Forum

Our next meeting in May 2018 will be in Maui, Hawaii, at the North American Veterinary Dermatology Forum. At this venue, we hold a half-day session of lectures and breakfast roundtables dedicated for the technicians. Additionally, this is where we offer the VTS credentialing exam. The 2019 meeting will be held in Austin, TX. We look forward to seeing you at a future event!

Visit www.navdf.org to learn more!



WESTERN VETERINARY TECHNICIAN SYMPOSIUM

The Oquendo Center
Las Vegas, Nevada
August 6 – 8, 2018

Sessions include Pain
Management/Physical
Rehabilitation/Surgery disciplines

REGISTRATION OPENS 2/26/18.

Academy of Physical Rehabilitation Veterinary Technicians

Continuing Education Opportunities:

We are pleased to announce the first symposium sponsored by the Academy of Physical Rehabilitation Veterinary Technicians! A pre-symposium track at the International Association of Veterinary Rehabilitation and Physical Therapy will be held July 31, 2018 in Knoxville, Tennessee. Attendees of the APRVT pre-symposium will have the opportunity to attend lectures from the American College of Veterinary Sports Medicine and Rehabilitation and American Association of Rehabilitation Veterinarians lectures. **Register online at:** <http://conferences.utk.edu/iavrpt/info.html>.

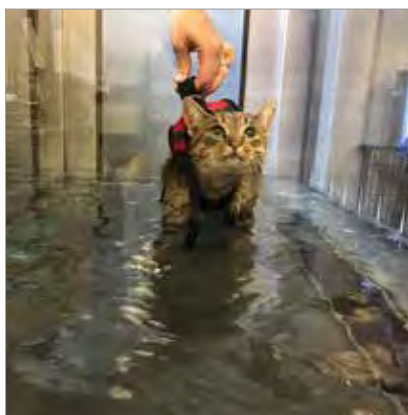
Want to write?

Attention applicants!! Do you need points for APRVT points system? Participate in this newsletter opportunity to get your feet wet writing for a publication! Pick your favorite topics in physical rehabilitation or a tech tip and submit it for consideration to the monthly American Association of Rehabilitation Veterinary - Tech Corner. Word count is limited to 800 words with no more than two images provided (300 dpi minimum). Send submissions to Dawn Hickey at dhickey74@gmail.com.

Contact the APRVT

VETREHABTECHS@gmail.com
Facebook@vetrehabtechs
Instagram@aprvt_vetrehabtechs
Website www.aprvt.com

— Kristen L. Hagler, BS (An. Phys.), RVT, VTS
(Physical Rehabilitation-OC), CCRP, CVPP, COCM, CBW



APRVT members often incorporate feline rehabilitation into their programs.

FLEA ALLERGY DERMATITIS: BEYOND THE FLEAS

Chantelle Hanna, BS, CVT, VTS (Dermatology)
Southeast Veterinary Dermatology and Ear Clinic

LEARNING OBJECTIVE:

Learning Objective: After reading this article readers will be able to describe the biological mechanism of flea allergy in dogs and cats, recognize key information about the flea life cycle, categorize different types of flea control products, and translate their knowledge into skilled client education.

Introduction

There are more than 2,200 species and sub-species of fleas throughout the world. Their history dates back 60 million years after being found on prehistoric mammals, but the cat flea, *Ctenocephalides felis felis*, is arguably one of the most important ectoparasites that affects dogs and cats, not only here in the United States, but worldwide.^{1,2,3} They are a reservoir of disease for both humans and animals alike and can cause a host of other problems including flea allergy dermatitis (FAD).

Flea allergy dermatitis can literally be a pain in the butt for our patients and a symbolic one for owners. The issues associated with FAD go beyond the simple matter of pets having fleas. They enter a

realm where we are afloat on a boundless sea of products and face a seemingly insurmountable storm of client education, beginning with the difference between simply having fleas and FAD, often in an already adversarial atmosphere sparked by the mere mention of fleas.

First, it is important to distinguish the difference, especially for pet owners, between having fleas and FAD. In order to have a thorough understanding of FAD and the complicating factors that go hand in hand with it, we need to start with an understanding of the enemy, the cat flea, *Ctenocephalides felis felis*. Second, providing education on all available flea control products and how their ingredients work is also a must. Lastly, and most importantly, is the ability to parley that information to the client to help them to understand FAD, how it affects their pet, and what they can do to give their furry family member a fighting chance against the perils of flea exposure.

Flea Biology

It is extremely important to understand

the biology, ecology, and behavior of fleas when dealing with a pet suffering from FAD. This understanding will help put the need for excellent regimented flea control into perspective when discussing FAD with clients.

Cat fleas are small brown wingless insects belonging to the Order Siphonaptera and family Pulicidae.^{1,3} Their bodies, which are laterally compressed, are well suited to their host environment, particularly their suckorial mouth parts and legs designed for jumping as well as securing themselves within the hair coat of their host.^{3,4} Males are typically smaller than the females and are often mistaken for baby fleas by owners.⁴

Once an adult secures a host, feeding typically begins within less than five minutes. Blood meals are a key necessary factor in the flea's breeding success. Female fleas, each with four ovaries, will mate with many fed males within 8–24 hours and begin laying eggs within 24–36 hours of colonization, laying up to 40–50 eggs per day. The eggs are pearly white and not sticky so they drop off the host into the

environment where they develop into the next generation of adults through three larval stages and one pupal stage. The entire length of the life cycle can be as short as 12 days to as long as 174 days depending on humidity levels and temperature, the ideal ranging around 70% and 20–30 degrees Celsius, respectively.^{2,3,4}

Newly emerged adult fleas primarily use visual cues to locate hosts, orienting themselves towards a light source and jumping when that source is interrupted (host shadow).^{4,5} Adults typically live permanently in the hair coat of one host. They don't make a habit of jumping from pet to pet but will abandon the host under certain circumstances, such as when the host's body temperature falls (anesthesia, death), when that current host is not a preferred species, or if current populations on that host are extremely high.³

Wildlife and stray animals are major culprits for perpetuating the flea lifecycle and can be a significant source of exposure for pets.³ Even highly developed urban areas are well populated with coyotes, gray foxes, raccoons, opossums, skunks, and rodents which can all harbor cat fleas.^{2,3} They travel through yards, hiding in dark spaces under porches and out buildings, and drop flea eggs and flea feces into the environment wherever they go, like little parasite salt and pepper shakers, leaving them to develop into adults that will eventually find their way to our companion animals.

Hypersensitivity and Flea Allergy Dermatitis

Flea allergy dermatitis (FAD), also known as flea bite hypersensitivity (FBH), is a hypersensitivity response to antigens, and more specifically, the proteins in flea saliva which manifests as skin issues for our companion animals.⁴ In fact, to date there have been at least 15 potentially allergenic components identified in flea saliva.² Not all animals colonized with fleas will develop a hypersensitivity to flea saliva (FAD), but they may in fact develop dermatitis directly related to the bites, referred to as

flea bite dermatitis (FBD). These non-allergic dogs and cats can develop pruritus, mild skin irritation, and/or "hot spots" secondary to the bites themselves.² It's important to distinguish between flea bite dermatitis FBD and FAD.⁶

Although FAD is sometimes known as FBH, the development of the hypersensitivity to flea saliva is what leads to the actual dermatitis. It is thought that animals with atopy, or environmental allergies, may be pre-disposed to developing this hypersensitivity.¹ Dogs and cats with FAD can demonstrate several different types of hypersensitivity reaction. Type I reactions are an immediate hypersensitivity, a humoral response where immunoglobulin E (IgE) binds to mast cells in tissue causing degranulation and a release of inflammatory mediators such as histamine, leukotrienes, and serotonin. It is these mediators that cause local vasodilation, edema, and pruritus. Type IV reactions are delayed-type reactions and are cell-mediated, involving sensitized inflammatory cells such as T-lymphocytes and macrophages, which release cytokines.^{3,7} The third type of reaction is a transient delayed hypersensitivity, cutaneous basophil hypersensitivity (CBH).² It is the Type I and Type IV reactions we look for when performing intradermal allergy testing.

The Face of FAD

There is no breed or sex predilection for dogs or cats where FAD is concerned. Age of onset can vary, but it is generally accepted to be between the ages of one and six years of age. Dogs that live in flea-endemic areas and are thought to be pre-disposed to flea

allergy typically show signs by age five. One epidemiologic study found that dogs that grew up in a flea-endemic area were less likely to develop FAD than dogs who grew up in a non-endemic area and moved to an endemic area later in life.^{4,6} It is also important to note that pets intermittently exposed to fleas are more apt to become flea allergic and develop FAD than are pets with chronic exposure, hence the importance of regimented flea control.^{2,3,4} Seasonality of FAD will vary greatly depending on geographic location.⁸ Certain regions can maintain ideal temperatures and humidity levels year-round, such as north-central Florida where larvae have been shown to



Figure 1: Self-induced alopecia on the caudal aspect of a dog with FAD



Figure 2: Dorsal view of a dog with dorsolumbar self-induced alopecia

This program was reviewed and approved by the AAVSB RACE program for 1 hour of continuing education in jurisdictions which recognize AAVSB RACE approval. Please contact the AAVSB RACE program if you have any comments/concerns regarding this program's validity or relevancy to the veterinary profession.

survive outdoors year round with survival rates as high as 84.6% in September and November.¹ Seasonality may also be affected by the severity of the infestation since fleas are happy to survive year round indoors.⁴

What does FAD look like for our patients? Symptoms can range from mild to severe, localized to generalized. Patients suffering from the effects of FAD often present with a myriad of skin issues, which can differ dramatically between cats and dogs. The one hallmark symptom affecting both dogs and cats alike is pruritus, which can be severe, leading to signs of self trauma.^{3,4}

The more common symptoms of FAD seen in dogs include erythema, papules, pustules, alopecia, lichenification (“elephant skin”), and hyperpigmentation. These signs are often concentrated on the dorsal lumbosacral region, tail base, tail, flanks, perineum, medial and lateral hind legs, and caudal abdomen. This caudal section of the body is sometimes colloquially referred to as the “pants” region. Imagine the patient wearing pants and this is typically where flea allergic dogs will be chewing and licking (Figures 1 and 2). Flea allergic dogs will also sometimes chew at their forelegs, a behavior called “corn-cobbing.” Secondary bacterial or *Malassezia* infections are common in the canine patient. They can significantly increase the already high level of pruritus and may require treatment with an antibiotic or antifungal. Pyotraumatic dermatitis (“hot spots”) and acral lick granulomas due to self trauma can also be a potential problem.^{2,3,4}

There are other less common symptoms of flea allergy that dogs occasionally present with such as urticaria, or hives. A flare of a concurrent allergy such as atopic dermatitis secondary to the FAD is also possible.³ Dogs that present with otitis are actually much more likely to be experiencing a flare of a concurrent allergy like cutaneous adverse food reaction or environmental allergies.⁴ A rarely seen clinical sign of FAD, but more common to German shepherd dogs, are fibropruritic nodules. Found on the dorsolumbar area, they are small alopecic,



Figure 3: Flea allergic cat with an eosinophilic plaque on the lateral neck and face.

pruritic, firm nodules, which can sometimes be crusted or ulcerated.³

Cats will typically develop symmetrical alopecia on the dorsolumbar region that gives the appearance of two little landing strips. Generalized scaling may be visible. Miliary dermatitis, which is a crusted papular rash often found on the head, neck or dorsolumbar region.^{4,8} In one study, over 60% of cats experimentally sensitized to flea saliva developed indolent ulcers on their lips.⁴ Less common symptoms of FAD in cats include eosinophilic plaques (Figure 3) and linear granulomas commonly found on the medial thighs and inguinal area, as well as pruritus of the face and neck. Secondary infections are a little less common but by no means impossible and may be a complicating factor.⁸

Making a Diagnosis

There are five major cornerstones that help diagnose flea allergy dermatitis including history, clinical presentation on exam, evidence of flea exposure (adults, flea feces), response to increased flea control, and the final tool available for confirmation of flea allergy is either intradermal allergy testing or serologic testing.^{4,9}

A thorough history should include questions about the symptoms the pet

is experiencing, the current flea control program, and any exposure risks.

- Where is the pet licking, chewing, or scratching?
- What is the pet’s current flea control regimen?
- Is the pet being dosed appropriately? (dosing interval, given with food, not applied before or after bathing, etc.)
- Are there other pets in the house including rabbits, ferrets, or hedgehogs? Are they also on flea control?
- What are the exposure risks? Does the pet go to daycare or a dog park? Do they live in an apartment community where the pet population is high? If they use topical flea control, do they bathe the pet frequently?
- Are there raised buildings with crawl spaces, raised porches, or heavily shaded areas of yard where stray animals or wildlife may frequent?
- Have fleas been seen previously? Has the pet ever been diagnosed with tapeworms?

The clinical signs noted on exam should be in line with the symptoms of FAD previously discussed. Use of a flea comb may provide some evidence of adult fleas or at the very least, flea feces or “flea dirt.” It is important to note that the lack of presence of fleas in either cats or dogs by no means excludes FAD as a possible diagnosis. Cats are fastidious groomers and allergic animals, both dogs and cats, will often over-groom and remove fleas before they’re found.^{4,9} Occasionally, when neither adult fleas, nor flea dirt can be found, tapeworms will serve as a tell tale footprint of their presence. Favorable response to aggressive flea control can also be a positive diagnostic tool to confirm FAD. Once a tentative diagnosis of flea allergy dermatitis is made, intradermal allergy testing and serology testing can also be used to support the diagnosis as well as institute desensitization protocols.^{4,9} Top differential diagnoses for FAD include atopy (environmental allergy), adverse food reaction (food allergy), dermatophytosis, superficial pyoderma, *Malassezia* dermatitis

TABLE 1. Common Flea Control Products in the U.S.

Trade Name	Chemical	Company	Action	Administration	Dogs and/or Cats
Bravecto	Fluralaner	Merck	Adulticide	Oral (dog) and topical (cat)	Both
Catego	Dinotefuran, fipronil, pyriproxyfen	Ceva	Adulticide, Insect Growth Regulator	Topical	Cats
Comfortis	Spinosad	Elanco	Adulticide	Oral	Both
Vectra for Cats/Kittens	Dinotefuran, Pyriproxyfen	Ceva	Adulticide, Insect Growth Regulator	Topical	Cats
Vectra 3D	Dinotefuran, Pyriproxyfen, Permethrin	Ceva	Adulticide, Insect Growth Regulator	Topical	Dogs
Advantage Multi	Moxidectin, Imidacloprid	Bayer	Adulticide	Topical	Both
K9 Advantix	Imidacloprid, Moxidectin	Bayer	Adulticide	Topical	Dogs
Nexgard	Afoxolaner	Merial/B.I.	Adulticide	Oral	Dogs
Revolution	Selamectin	Zoetis	Adulticide	Oral	Both
Sentinel, Spectrum, Flavor Tabs	Milbemycin oxime, Lufenuron	Virbac	Insect Growth Regulator	Oral	Dogs
Advantage II	Imidacloprid, Pyriproxyfen	Bayer	Adulticide, Insect Growth Regulator	Topical	Both
Frontline Plus	Fipronil, (S)-methoprene	Merial/B.I.	Adulticide, Insect Growth Regulator	Topical	Both
Frontline Gold	Fipronil, (S)-methoprene, Pyriproxyfen	Merial/B.I.	Adulticide, Insect Growth Regulator	Topical	Both
Frontline Tritak	Fipronil, (S)-methoprene, Etofenprox	Merial/B.I.	Adulticide, Insect Growth Regulator	Topical	Both
Effipro	Fipronil	Virbac	Adulticide	Topical	Both
Cheristin/Assurity	Spinetoram	Elanco	Adulticide	Topical	Cats
Trifexis	Milbemycin oxime, Spinosad	Elanco	Adulticide	Oral	Dogs
Capstar	Nitenpyram	Elanco	Adulticide	Oral	Both
Activyl	Indoxacarb	Merck	Adulticide	Topical	Both
Simparica	Sarolaner	Zoetis	Adulticide	Oral	Dogs
Seresto	Imidacloprid, flumethrin	Bayer	Adulticide, Insect Growth Regulator	Collar	Both

(yeast infection), behavioral disorder, and other ectoparasites (scabies, demodicosis, cheyletiellosis, pediculosis).^{4,8,12}

Knowing Your Treatment Arsenal

It seems like there are more and more flea control products on the market, especially with numerous generic and store-brand versions now available. It's important to have a good understanding of these products such as ingredients and, at the very least, what their mode of action is (Table 1). Do they kill flea adults? Do they kill all flea life stages? Are they only insect growth regulators, preventing new fleas from hatching? What is their speed of kill? Do they repel fleas? Quite commonly, modern residual adulticides are often combined with IGRs to help significantly reduce, if not eliminate flea populations. Environmental control with products

containing pesticides outdoors may also be necessary to help minimize exposure to fleas for flea allergic pets.

There are other factors to be aware of when it comes to the numerous flea control products available. For instance, there are flavorings added to some flea control products. It is not uncommon to encounter a patient that may be on a food trial, so knowing that a certain product may contain pork or beef becomes very important. Is the client bathing frequently? If so, topical application products may not be the best choice. Mechanical control of flea populations such as vacuuming around sleeping and feeding areas, two places where pets spend the most time, can also be a useful tool in the war against the cat flea infestation.¹¹

Patients may require treatment of secondary infections with antibiotics or antifungals. As secondary infections can potentiate the level of pruritus, treatment of these may help to make the patient more comfortable. Anti-inflammatory doses of glucocorticoids, typically the most helpful therapy for controlling pruritus due to flea allergy, may also be necessary.^{4,10} Topical therapy with antimicrobial products such as shampoo

or mousse can help resolve secondary infections more quickly. Topical steroids help reduce pruritus and can be an extremely helpful tool to reduce the need for oral steroids.

Hydrocortisone 1% is a fairly mild topical steroid and can typically be used long term with minimal side effects such as skin atrophy. More potent steroids for topical use include triamcinolone acetonide (0.1%), betamethasone valerate (0.1%) and dexamethasone acetate (0.1%). Hydrocortisone aceponate (0.584%) and triamcinolone acetonide spray (0.015%) are moderately potent and are known to be cutaneously absorbed but are reported to have fewer systemic side effects overall. Non-steroidal topical therapy products containing lidocaine, benzocaine, pramoxine, camphor, and/or menthol, to name a few, can be useful for mild to moderate pruritus.¹⁰

Efficacy of hyposensitization to flea saliva is questionable.⁴ Some veterinary dermatologists include flea saliva antigen in their allergen specific immunotherapy recipes while others do not.

Client Discussions

Fleas are typically a hot-button issue for clients. They may become defensive as soon as the word "flea" is mentioned, and sometimes go on the offense by preemptively stating their pet's skin condition is not due to fleas because they have never seen a single flea on the pet. Allergic pets typically have a low flea burden and rarely show signs of the presence of fleas (such as adults or flea dirt), so it can be difficult to convince the owner that their pet's pruritus and clinical signs are due to fleas. We must find a way to achieve the ultimate goal of client education with our FAD patients: prevention of treatment failure.

A good starting point is explaining exactly what FAD is. A diagnosis of FAD doesn't mean that there's a flea infestation in the owner's home, or that the owner is somehow failing their furry best friend. It simply means that even with minimal exposure to flea saliva, which can



NAVTA BENEFITS

As a NAVTA member you receive:

- Receive NAVTA Journal and Enewsletters
- Complimentary access to the NAVTA CE Portal and CE modules
- Robust Career Center and resources
- **20%** membership discount if you are a specialist or member of your state association
- **10%** discount on VetMedTeam.com courses
- **10%** off Puppy Start Right for Instructors Course, hosted by the Karen Pryor Academy
- **20%** discount on Vetlexicon, the worlds largest online clinical reference source, provided by Vetstream. In addition, NAVTA members can receive a free, 30 day trial!
- **20%** off FearFree Certification
- Discounts on movie tickets, theme parks, hotels, tours, Broadway and Las Vegas Shows!
- Discounts with Embrace Pet Insurance
- **10%** discount on all online purchases at www.scrubidentity.com
- **\$5.00 off** David Liss offerings
- Complimentary membership with VetCheck - the amazingly simply veterinary communications software!
- **5%** discount on Disability Insurance through VetInsure
- **10%** discount from Petplan Pet Insurance
- **50%** discount on annual memberships with TrustedHousesitters
- **20%** discount on annual subscription to *VetCompanion*®
- **25%** discount and free shipping on Elsevier titles
- **15%** discount for I Love Veterinary Medicine merchandise



COMING IN EARLY 2018
special NAVTA health, wellness and lifestyle discount programs.



occur no matter how aggressive their flea control program is, their pet can develop an extreme allergic response, which manifests as extreme pruritus, hair loss, and secondary infections. Owners should come away understanding that exposure to even a minimal number of flea bites can cause severe prolonged itch and even secondary infections.

One of the tools we can provide clients is a better understanding of the enemy. If we can teach clients a basic understanding of flea biology, along with a clear understanding of FAD, they may be more likely to follow an aggressive flea control regimen. They can help identify possible exposure risks such as wildlife traffic in the back yard, or an outbuilding with a crawl space underneath. They can even pinpoint possible exposure risks before they happen, such as planning to take the family dog to daycare. This understanding of the flea lifecycle will help set reasonable expectations in the treatment of an infestation in their home. Clients also need to understand this will not be an immediate fix due to immature flea life stages continuing to develop. Clients may also be more likely to treat all pets in the household if they understand that these pets can be

By providing clients the information they need to win the war, setting reasonable expectations, and preparing them for any problems along the way, treatment success is much more likely.

reservoirs for possible exposure to their flea allergic pet.

Knowledge of how flea control products work can help a client see why certain products are preferable over others when it comes to protecting flea allergic dogs as opposed to simply just preventing a flea infestation. Female fleas can lay eggs at a declining rate for up to 100 days and, in order to do so, they'll consume about 13.6 microliters of blood, more than 15 times their body weight, daily.² Using a flea control product that is comprised only of an insect growth regulator (IGR) instead of an adulticide can mean big trouble for their flea allergic furry family member, sentencing them to up to 100 days of repeated exposure to flea saliva. A client may be less averse to switching products with all this information in hand. Demonstration of the application of these flea products is a must and will help to prevent treatment failure due to human error. Discuss treatment recommendations such as oral tablets needing to be given with a full meal, or topical products not being applied within 48 hours of a bath.

Lastly, and likely most importantly, reasonable expectations for treatment must be set, not only with regards to using

flea control products, but also in treating secondary infections. By providing clients the information they need to win the war, setting reasonable expectations, and preparing them for any problems along the way, treatment success is much more likely. Many a technician has received a call from a frustrated client who is seeing live fleas on their pet and believes their flea control product is no longer working. However, odds are that this perceived product failure is likely due to a breakdown in communication, education, outcome expectations, or correct product usage.

Some talking points include:

- The difference between having fleas and FAD
- Basic flea biology and behavior as it pertains to their pet (exposure risks)
- How flea control works
- Reasonable expectations for treatment, including treating secondary infections, and desensitization

Summary

Flea allergy dermatitis is a skin condition that arises from a hypersensitivity to saliva from the cat flea. Patients that suffer from FAD typically suffer from severe pruritus and often secondary infections as well. Avoidance of flea bites remains the best long term solution to FAD, which is accomplished by implementing an aggressive flea control program that may also include environmental controls. There is no doubt that communication skills when providing

client education can be put to the test when discussing FAD, but it begins and ends with the ability to impart our knowledge of fleas, flea control products, and FAD to clients so they can successfully win the battle with fleas and bring relief to their furry best friends. **J**

REFERENCES

1. Rust MK. The biology and ecology of cat fleas and advancements in their pest management: a review. *Insects* 2017; 8(4), 118
2. Blagburn BL, Dryden M. Biology, treatment, and control of flea and tick infestations. *Veterinary Clinics of North America: Small Animal Practice*. 2009 39: 1173–1200
3. Cadiegues MC. Flea Biology and Ecology. In Noli C, Foster A, Rosenkrantz W eds. *Veterinary Allergy*. Wiley Blackwell 135-139
4. Miller W, Griffin C, Campbell K Muller and Kirk's. *Small Animal Dermatology*. 7th ed. St. Louis, MO 2013
5. Dryden M, Rust MK. The cat flea: biology, ecology and control. *Veterinary Parasitology* 1993 52, 1-19
6. Halliwell EW. The Pathogenesis of Flea Bite Allergy in Dogs. In Noli C, Foster A, Rosenkrantz W eds. *Veterinary Allergy*. Wiley Blackwell 140-148
7. Day MJ. Introduction: The Immunological Basis of Allergic Diseases. In Noli C, Foster A, Rosenkrantz W eds. *Veterinary Allergy*. Wiley Blackwell xv-xxi
8. Vroom MW. Flea Allergy Dermatitis. In Guagere E, Prelaud P eds. *A Practical Guide to Veterinary Allergy*. Merial 9.1-9.6
9. Logas D. Diagnostic Investigation of Canine Flea Bite Allergy. In Noli C, Foster A, Rosenkrantz W eds. *Veterinary Allergy*. Wiley Blackwell 149-151
10. Logas D. Symptomatic Relief for Canine Flea Bite Hypersensitivity. In Noli C, Foster A, Rosenkrantz W eds. *Veterinary Allergy*. Wiley Blackwell 158-161
11. Dryden MW. Implementing an Effective Flea Control Programme. In Noli C, Foster A, Rosenkrantz W eds. *Veterinary Allergy*. Wiley Blackwell 152-157
12. Hnilica KA. *Small Animal Dermatology: A Color Atlas and Therapeutic Guide*. 3rd ed. St. Louis, MO: Elsevier Saunders 2011



CHANTELLE HANNA

Chantelle Hanna earned a Bachelor of Science in Biology from Roger Williams University, Bristol, Rhode Island in 1997, after which she started her career as a veterinary technician. After working as a technician at smaller veterinary hospitals, she began working at Angell Animal Medical Center in Boston, Massachusetts in 2001, and achieved her CVT by 2002. She worked as a CVT, Hospital Supervisor, Clinic Supervisor, and Dermatology Technician Supervisor until 2011, when she moved to Florida to continue her work as a dermatology technician. In August of 2016, she joined the Southeast Veterinary Dermatology and Ear Clinic family. She is a charter member of the Academy of Dermatology Veterinary Technicians, and is a VTS in dermatology. In her free time, she enjoys mountain biking, traveling with her husband and father, and spending time with her cat Pyewacket.

LET'S REVIEW...

1. Newly emerged cat fleas hunt for new hosts by using what cues?
 - a. Visual cues
 - b. Temperature cues
 - c. Carbon dioxide level cues
 - d. Vibration cues
2. What factor perpetuates the cat flea lifecycle and serves as a major source of exposure flea exposure?
 - a. Standing water
 - b. Warm temperatures
 - c. Wildlife and strays
 - d. Carpets
3. Dogs and cats can demonstrate what types of hypersensitivity reactions?
 - a. Type I, Type II, CBH
 - b. Type I, Type IV, CBH
 - c. Type II, Type IV, CBH
 - d. Type I, Type III, Type IV
4. Flea allergic patients will most frequently chew or scratch at which areas?
 - a. Feet, tail, and neck
 - b. Front legs, flanks, and tail
 - c. Front legs, inguinal area, and ears
 - d. Ears, shoulders, and face
5. The ultimate goal of client education for FAD patients is what?
 - a. Prevention of treatment failure
 - b. Understanding flea biology
 - c. Setting reasonable expectations
 - d. Demonstration of flea control product application



Visit VetMedTeam.com and log in with your Vet Med Team Profile.

Alleviating Stress

in Emergency and Critical Care Patients

Melissa McLaughlin, CPhT, RVT, VTS (ECC), KPA-CTP

Emergency and/or critical care workers are often handling urgent cases in a very fast paced environment. Unfortunately, this setting is not always conducive to caring for a patient's emotional needs. While administering the urgent medical treatment required in these situations is the first priority, there are also some helpful ways to protect the patient's well-being even in these critical situations.

Keep Patients with Their Owners When Possible

Being in an unfamiliar environment can cause fear. Having a familiar person there is one way to help minimize fear and therefore, anxiety and stress.

Control Pain

Pain can contribute to fear, anxiety and stress. Opiates are ideal for treating pain. Most come with the added benefit of sedation, however, sedation alone is not a treatment for fear.

Control Fear and Anxiety

While acepromazine is an effective sedative, it is contraindicated for treating anxiety and aggression.¹ Instead, consider trazodone. Trazodone is an SARI, and is useful in treating anxiety and causing sedation in dogs and cats. The dose for dogs is 3-7mg/kg PO SID-BID and 25mg PO per cat, SID-BID.⁵

Slow Down

Even in an emergency, you should take time to consider your patients emotional needs. This includes treating pain and anxiety first, using less invasive handling techniques (Low Stress or Fear Free^{6,7}) and equipment, and knowing when to stop and let the patient rest. Unless the patient is actively dying, you can let them relax for a few minutes in a kennel before continuing with your treatments. Consider opiate sedation for patients that are resisting procedures or treatments. When forcing patients to comply or trying to move too quickly, patients often get handled more roughly, leading to fear, anxiety and stress. This can also lead to bites or other injuries for employees.



Providing food, water and bathroom breaks seem like easy enough tasks, but often in busy ER and CC practices, these things are overlooked or skipped.

Tap Out If Needed

If you are fearful of a patient or getting frustrated, you should not just work through it. It happens to everyone at some point. When the feeling of fear or frustration arises, ask someone for help. Step away for a few minutes to regain your composure. Patients can sense your fear, frustration and anxiety and often respond to that energy with aggression and increased fear.

Ditch the Cloth Muzzles

Cloth muzzles greatly reduce the pet's ability to pant and breathe normally, which increases fear and anxiety in an already stressful situation. A much less invasive option is a basket muzzle. For cats, the Air Muzzle[®] is a great option for keeping staff safe, and cats less stressed.

Keep Things Quiet

If there is a howling patient in the hospital it should be addressed, not only for the

howlers sake, but also for the other patients and clients in the clinic. A howling patient creates a perception that an animal is in distress, and loud environments cause anxiety and stress in humans and animals.⁴ Emergency and critical care patients that are vocalizing should be immediately evaluated for pain and treated appropriately. If they are not painful, an anxiolytic like trazodone should be considered. Sedating drugs like low dose IV acepromazine (0.005-0.01mg/kg) or butorphanol (0.1-0.2mg/kg) can be used while trazodone reaches its peak effectiveness (within 1-2.5 hours). In severe cases, a dexmedetomidine CRI may be considered at a dose of 0.5 to 2.0 mcg/kg/hr. Other causes of vocalization to be considered are listed below.

Emergent and Critical Cases Need a Comfortable Kennel

This should be done as soon as they go into a cage or run. Provide padding for large

dogs and cozy spaces for small dogs and cats. Inexpensive bolster beds are easy to wash and small dogs and cats love them. Fearful cats like to hide. Provide a box for shelter or cover part of the kennel with a towel or blanket. Giving cats a quiet space, away from dogs, will help lower their stress levels.⁴

Move Pets Out of Recovery Kennels

Post-operative patients are often not only in pain, but fearful as well. In some cases, by simply moving the pet out of the recovery kennel to a new one with a different sight perspective a day or so after surgery can help negate the pain and fear they associate with this recovery area.²

Minimize taking temperatures and other stressful handling

If a patient isn't febrile or at risk for it, there's no clinical need for rectal





NAVTA MEMBER
RENEWAL



Do you want to connect with people who believe in you, support you, and elevate you in your life and in your career?

If you're ready to feel empowered, join or renew your membership with the National Association of Veterinary Technicians in America (NAVTA). We welcome everyone in the industry, including credentialed veterinary technicians, veterinary assistants, veterinarians, educators and students.

NAVTA gives you the voice that elevates your role in the veterinary community, sparking conversations around the world that keep our members on the cutting edge of research and education in the industry.

As a NAVTA member you'll receive:

- The *NAVTA Journal* and NAVTA e-newsletter
- **20% membership discount** if you are a specialist or member of your state association
- **10% discount** on VetMedTeam.com courses
- **10% off** Puppy Start Right for Instructors Course, hosted by the Karen Pryor Academy
- **5% discount** on Disability Insurance through VetInsure
- **20% discount and free, 30 day trial** on Vetlexicon, the worlds largest online clinical reference source, provided by Vetstream
- **20% off** FearFree Certification
- **20% discount** from PetPlan Pet Insurance
- Discounts with Pet Health Insurance Plans
- **25% off and Free Shipping** on Elsevier Publications
- **Complimentary membership with VetCheck**—the amazingly simply veterinary communications software!
- **20% discount** on annual subscription to *VetCompanion*[®]
- Access to NAVTA Social Link—allowing networking and engagement with other members!
- Access the NAVTA Career Center—allowing you to post resumes and look for jobs across the nation!
- Watch for more EXCITING opportunities and benefits to come in 2018!

Joining NAVTA is truly an investment in YOU.

Visit www.navta.net to become a member or to renew your membership today.

temperatures every four hours. Yes, there are cases where Q4h temperatures are warranted, but in these cases, an ear temperature probe can be used instead. Consider which treatments and monitoring cause patients the most discomfort while in hospital. Whenever possible, minimize or change these procedures in order to alleviate stress in an already fearful patient.

Take Care of the Basics


Providing food, water and bathroom breaks seem like easy enough tasks, but often in busy ER and CC practices, these things are overlooked or skipped. When an emergency patient is first placed into a kennel, they should be offered water, unless it is contraindicated by their present condition. Critical care patients should have output monitored and if excessive or absent should be addressed by placing a urinary catheter or having more frequent trips outside (once causes of oliguria and anuria have been ruled out). If your patients refuse to eat, try a variety of different foods, canned and dry. Also, tasty treats like chicken or baby foods may entice the patient to eat. A patient that refuses food or water should be experiencing pain or excessive stress/anxiety, which need to be addressed and alleviated.

Fear and anxiety are not the same. Fear is a natural response to a potentially dangerous stimulus. Fear leads to anxiety and prolonged anxiety leads to stress. Stress can also be caused directly by pain and discomfort.⁴ Patients that are stressed are less likely to eat while in hospital. Patients that do not eat are often hospitalized longer. Patients that are less stressed in the hospital setting recover faster, which leads to faster



Fear and anxiety are not the same. Fear is a natural response to a potentially dangerous stimulus. Fear leads to anxiety and prolonged anxiety leads to stress.

dismissals, higher employee satisfaction and happier clients.³

Using techniques to reduce fear, anxiety and stress benefits the emergency and critical care clinic in many ways. The client feels better about how their pet is handled, the patient recovers faster, and are dismissed sooner. The staff will feel better about how patients are treated, have more job satisfaction and suffer less injury. 

REFERENCES

1. Frank, D.; Gauthier, A.; Bergeron, R. Placebo-controlled double-blind clomipramine trial for the treatment of anxiety or fear in beagles during ground transport. *Can. Vet. J.* 2006, 47, 1102–1108. [PubMed]
2. Grandin, T., & Dessing, M. (n.d.). *Distress in Animals: Is it Fear, Pain or Physical Stress?* Retrieved December 6, 2017
3. Hekman, J., Karas, A., & Sharp, C. (2014). Psychogenic Stress in Hospitalized Dogs: Cross Species Comparisons, Implications for Health Care, and the Challenges of Evaluation. *Animals*, 4(2), 331–347. doi:10.3390/ani4020331
4. Lloyd, J. (2017). Minimising Stress for Patients in the Veterinary Hospital: Why It Is Important and What Can Be Done about It. *Veterinary Sciences*, 4(2), 22. doi:10.3390/vetsci4020022
5. Sueda, Karen Lynn C., Cho, Julie (2016) *Trazodone. Plums Therapeutics Brief*. https://www.veterinaryteambrief.com/sites/default/files/attachments/PTB_TS_Trazodone.pdf. Retrieved February 13, 2018
6. <https://lowstresshandling.com>
7. <https://fearfreepets.com>

THE BASICS OF CANINE ATOPIY

Jacqueline A. Davis, VMT, VTS (Dermatology), Charter Member
University of Tennessee Veterinary Medical Center

LEARNING OBJECTIVE:

After reading this article, readers should understand the definition of canine atopy and its pathogenesis. They will also become familiar with the clinical signs of, and diagnostic methods for, atopy and various treatment options for patients with atopy. Environmental allergy (atopy) can be one of the most challenging conditions to diagnose and treat. Understanding the basics of atopy will help the veterinary technician support the client and patient in the process of reaching a maintenance treatment plan.

What is Atopy?

Atopy is the condition of having a type 1 hypersensitivity allergic response to an environmental allergen and producing Immunoglobulin E (IgE) antibodies to that allergen.¹ Some animals have all of the clinical signs of atopy but do not have any measurable IgE and therefore are said to have atopic-like dermatitis.^{1,2} In addition, some animals have clinical signs of atopic dermatitis triggered by food allergens. For the purpose of this article, “atopy” and “atopic disease” will refer to environmental allergy.

Animals that have atopy will most commonly present with signs of atopic dermatitis including pruritus, erythema, and alopecia. These patients may also present with secondary infections.

Pathogenesis

The pre-disposition to develop atopic disease is considered to be genetic. In animals that are pre-disposed to develop atopy there are two steps to sensitization to an allergen: initial response and re-exposure.

Initial Response

Allergens cross the skin barrier and allergen-presenting Langerhans cells take the allergen to a regional lymph node. T-cell lymphocytes are activated and release cytokines, which are chemical “messengers” and are also known as interleukins (IL). Cytokines cause B-cell lymphocytes to release allergen-specific IgE antibodies, which bind to mast cells in the skin.³ Animals who have this response to a specific allergen are now sensitized to that allergen.

This program was reviewed and approved by the AAVSB RACE program for 1 hour of continuing education in jurisdictions which recognize AAVSB RACE approval. Please contact the AAVSB RACE program if you have any comments/concerns regarding this program's validity or relevancy to the veterinary profession.

Re-exposure

Upon re-exposure to an allergen to which an animal has been sensitized, the cytokines that are released by the sensitized T-cells will travel to neuron receptors in the skin. At this point, various processes occur which play a role in evoking the clinical signs of atopy. The IgE-bound mast cells degranulate which releases inflammatory and pruritus-eliciting chemicals such as histamine. Also, certain cytokines that are released by the T-cells are themselves pro-inflammatory and pruritus inducing.^{1,3}

In addition to this immune system defect, it is also thought that a defect in the skin barrier itself may make dogs more susceptible to developing atopic dermatitis. Lipids are necessary for normal function and structure of the skin. Dogs with atopic dermatitis have been shown to have lower lipid contents in their skin than normal dogs.²

Clinical Signs

There is no sex predilection for atopy. Some breeds, especially those in the terrier and retriever groups, seem to be more

predisposed to developing atopic disease than other breeds.

Due to the need to have re-exposure to allergens before the effects of atopic disease are manifested, the majority of patients with seasonal allergy will first start showing clinical signs between 1–3 years of age. Patients may start to show signs earlier than one year of age if they are continuously exposed to an allergen to which they are allergic. Examples are animals that are allergic to indoor allergens such as house dust mites or indoor molds, or animals that live in warm climates with continuous exposure to pollens. An exception to this would be an older animal that moved to a new geographic region and began showing signs after re-exposure to the new allergens in that region. Depending on the geographic region, and which allergens they are allergic to, signs may improve or disappear during the cold months when there are less pollens in the environment. Patients may also have year-round signs with seasonal worsening, or develop year-round signs after years with only seasonal flares.

The primary clinical sign of atopic disease is pruritus, which can range from mild to severe. Other common signs include erythema, papules, and alopecia due to self-trauma. Animals that have had on-going signs of atopy may also have lesions indicating chronic dermatitis such as lichenification and/or hyperpigmentation. Patients may also present with a secondary pyoderma and/or yeast dermatitis, which can exacerbate pruritus and must be treated appropriately in order to determine the true level of itch due to atopy. There may also be a concurrent bacterial and/or yeast otitis. Common body sites for pruritus due to atopic disease include the face, feet (Figures 1, 2), and ventrum, although generalized itching may also be present. Clients may report that the patient rubs at the face, licks and chews the feet, and scratches or licks the ventrum. Some patients can also have an allergic otitis, which presents with pruritic ears without a component of infection. Atopic animals can also be pre-disposed

to developing, or concurrently having, other types of allergic disease such as flea allergy and cutaneous adverse food reaction and signs of those conditions may be present.

Diagnosis

There is no specific diagnostic test for atopic disease; diagnosis is based on patient history, clinical presentation, and ruling out other allergic conditions (i.e. flea allergy dermatitis and cutaneous adverse food reaction). A thorough history, including questions about seasonality, age of onset, location of itch, and physical exam are essential for making a diagnosis of atopic disease. Skin and ear cytology and deep skin scrapes should be performed to identify or rule out secondary infections and demodicosis. Once the diagnosis of atopy has been made, and if the clients are willing to pursue allergen specific immunotherapy (ASIT), then the patient can undergo intradermal allergy testing (IDAT) or serum allergy testing in order to formulate a vaccine for the patient.

Various medications can have adverse effects on the results of IDATs. It is recommended that patients be withdrawn from these medications for a specific amount of time prior to IDAT. Although there are not currently research-based guidelines¹, the general recommendations are that patients be withdrawn from oral and topical steroids for at least four weeks, and antihistamines for at least two weeks prior to IDAT. Both corticosteroids and antihistamines can suppress the cutaneous reaction of injected allergens and cause a false negative test. A highly stressed patient may also produce a false negative IDAT due to excess cortisol production.¹

IDATs are most commonly performed in the clinic of a veterinary dermatologist



Figure 1: Alopecia, erythema, skin thickening, and infection due to chronic pedal pruritus



Figure 2: The caudal surface of the metacarpus is a common area for pruritus due to atopy

and involve injecting a small equal amount of each allergen into the dermis and measuring any reaction observed. Allergens in the test kit are chosen based on the most common allergens in the geographic region and are usually a combination of grass, tree, and weed pollens, molds, and insects. Although it is possible to perform IDATs in fully awake patients, light sedation can be used to make the procedure less stressful for the patient and veterinary team. A rectangle of hair is clipped from the lateral thorax to allow access to the skin. Care should be taken to not traumatize the skin with the clippers. Saline is used as a negative control and histamine is used as a positive control and reactions of the injected allergens are measured relative to those



Figure 3: After clipping, evenly spaced marks are made on the skin to facilitate placement of the injections

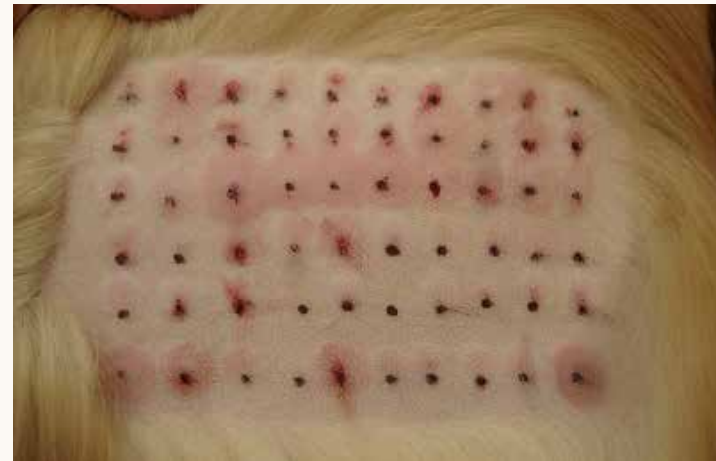


Figure 4: A completed IDAT showing wheals in the locations of the positive-reacting allergens

controls. A small amount of each control and allergen is injected intradermally (Figure 3) and observed for a wheal-type reaction. Reactions can be measured either subjectively (with palpation for turgor and visually noting erythema) or objectively. Positive reactions (Figure 4) are considered indicators of allergen-specific IgE in the skin but are not indicators that those specific allergens are causing clinical signs.¹ Extracts of the reactive allergens can then be made into an allergy vaccine specific for the patient.

Various laboratories offer serum allergy testing which generally involves sending a measured amount of serum to the lab for testing. These laboratories use various testing methods to measure the amount of allergen-specific IgE in the serum. As with IDAT, positive reactions are not indicators that those specific allergens are causing the clinical signs and the results must be interpreted in light of the patient's clinical signs.¹

Treatments

All treatments are used to control, not cure, the signs of atopy. Treatment is generally life-long and individualized for each patient. Clients should be made aware that signs of atopy may never be completely controlled and even animals that have been well controlled for long periods of time can have breakthrough signs of atopic

disease which may necessitate adjusting the treatment protocol. If there is a concurrent pyoderma and/or yeast dermatitis, it should be treated with appropriate antimicrobial/antifungal therapy in conjunction to atopy treatments. If there is a component of food or flea allergy, those conditions should also be managed appropriately to decrease the allergen load to the patient. The following is not a comprehensive list but includes the most conventional therapies used to treat patients with atopy.

Topical Treatments

When used alone, topicals are usually effective only in patients with mild allergic symptoms. Patients with moderate to severe atopic signs will likely need other therapies in addition to topicals. Topical treatments can be beneficial for all atopic animals as they can help reduce the numbers of allergens on the skin. Active ingredients in topical formulations can be anti-pruritic such as antihistamines and steroids or anesthetics such as lidocaine and pramoxine. Other products focus on restoring lipids to the skin to improve barrier function. The myriad of formulations such as shampoos, conditioners, rinses, wipes, ointments, and creams and active ingredients makes it possible to choose one or more that fits the needs of the patient and client.

Systemic Treatments

Essential Fatty Acids

Essential Fatty Acids (EFAs) are given to help restore the lipid barrier to the skin. They are available in both over-the-counter human and veterinary formulations. Some veterinary diets also have added EFAs. EFAs may help as an adjunctive therapy for atopic disease or when used alone in mild cases.

Antihistamines

Antihistamines work by blocking the histamine (H₁) receptors on mast cells. Antihistamines are a safe, cost-effective method for treating mild to moderate signs of atopic disease. They are usually used in conjunction with other treatments, except in very mild cases. Sedating antihistamines such as diphenhydramine and hydroxyzine have been used with some success; non-sedating antihistamines such as cetirizine and loratadine have recently been tried with varying success. There is no "perfect" antihistamine for every patient; therefore, various antihistamines, dosages, and frequencies of dosing may have to be tried in order to discover which is optimal for the patient.

Glucocorticoids

Glucocorticoids control itch by blocking chemicals that cause inflammation in the skin and elsewhere in the body.

The Weight Is Over™



Introducing the PortionPro Rx
Your game-changing new tool to prevent food stealing and perfectly feed pets.

Visit www.portionpro.com to sign up, receive a Welcome Kit, and get discounts.

Glucocorticoids are extremely effective in controlling signs of atopic disease but should be used with caution and short-term, if possible. Short-term, expected side effects are polyphagia, polyuria, polydipsia, and panting. Long-term use requires frequent monitoring and clients should be made aware of the expected and potentially serious side effects. Serious side effects can include gastrointestinal ulceration, urinary tract infections, and thromboembolism. Some patients do not respond to other therapies and if quality of life is in question, these animals may be able to be safely controlled long-term on a low, maintenance dosage. The most common oral glucocorticoids used in veterinary medicine are prednisone, prednisolone, methylprednisolone, dexamethasone and a trimeprazine-prednisolone combination. As with antihistamines,

there is not one specific steroid that works for every patient and some may respond better to certain steroids than others.

Cyclosporine

Cyclosporine controls itch and signs of AD by inhibiting T cell activation, release of histamine from mast cells, and cytokine production. Although cyclosporine may be cost prohibitive for the larger patient, it may be a good choice for therapy for the management of AD. The starting dosage is 5mg/kg/day and effectiveness can take up to 1-2 months.¹ If the patient responds favorably, the dosage may be able to be decreased to every other day. The most common side effect of cyclosporine use is vomiting, which can sometimes be alleviated by giving the medication with food. Although dogs can be maintained long-term safely with cyclosporine therapy, it is ideal to regularly check lab values to monitor for any systemic changes.

Oclacitanib

A Janus kinase is a group of enzymes that form pathways that cytokines use to transmit messages. Oclacitanib is a Janus kinase inhibitor and controls pruritus by blocking specific cytokines (IL-2, IL-4, IL-5, IL-6, IL-13, and IL-31) that are responsible for itch and inflammation. The recommended dosing schedule is 0.4-0.6 mg/kg twice daily for two weeks, then once daily.⁵ Longer than two weeks, at twice daily dosing, is not recommended due to the possible immune suppressive effects. Because onset of efficacy is rapid (within 1-2 doses) oclacitanib can be used short-term to control an itch flare. If the patient tolerates oclacitanib without any significant laboratory value changes, this may be a good option for long-term treatment of atopy. Patients who are on long-term

usage should be routinely monitored for side effects.

Lokivetmab

Lokivetmab is an injectable monoclonal antibody that specifically blocks one of the interleukins (IL-31) responsible for triggering the itch response. This has been shown to be a very safe, effective therapy, which makes it a good option for patients who have concurrent disease and could not tolerate other forms of treatment.⁶ The average length of frequency between injections is four weeks, but may last up to six weeks in some patients, so dosing schedules can be adjusted depending on patient response.

Allergen-specific immunotherapy (ASIT)

At this time, it is unclear exactly how immunotherapy works in animals but it is thought that it may have the same mechanism of action as in humans, which is to change the response of the T-cells and eventually bring about a decrease of allergen-specific IgE.⁴

Treatment with immunotherapy is based on results of IDAT and/or serum allergy testing and is individualized for each patient. Two routes of administration are available: subcutaneous and sublingual. Subcutaneous administration involves injecting the patient with an increasing concentration of specific allergens over a period of time. The goal is to reach a maintenance dose of the highest concentration available along with a reduction in frequency. Each patient's dosage regime may need to be adjusted based on response and/or adverse reactions to the vaccine. With sublingual administration, the patient receives a measured amount of allergens under the tongue twice daily. The risk of anaphylaxis is generally less with sublingual administration and it may work in patients who have failed previous therapy with

subcutaneous administration or be an option for clients who are unwilling to give an injection to their pet. It can take up to one year for immunotherapy to become effective, so other therapies will need to be used in the meantime to control symptoms. It is estimated that approximately 75% of patients will have improvement of symptoms with ASIT.¹

If a patient that was well controlled on therapy for a period of time becomes uncontrolled, then an exam for secondary infections and/or an adjustment in treatment protocol is necessary.

Conclusion

Management of patients with atopic disease can be frustrating for both the client and veterinary team. However, with good communication and patience on both the part of the client and veterinary team, a treatment plan can be reached that improves the quality of life for both the patient and client. **J**

REFERENCES:

1. Miller WH, Griffen CE, Campbell KL. Hypersensitivity Disorders. In: *Muller & Kirk's Small Animal Dermatology 7th Ed.* St. Louis, MO: Elsevier Mosby; 2013: 363-431.
2. Marsella R, De Benedetto A. Atopic Dermatitis in Animals and People: An Update and Comparative Review. *Veterinary Sciences.* 2017; 4(3):37.
3. Gaudiano, F. Allergic skin disease in the dog and cat. In: *Veterinary Dermatology: A manual for nurses and technicians.* Edinburgh: Elsevier; 2005: 79-103.
4. DeBoer, DJ. The future of immunotherapy for canine atopic dermatitis: a review. *Vet Dermatol.* 2017; 28: 25-e6.
5. Olivry T, DeBoer DJ, Favrot C, et al. Treatment of canine atopic dermatitis: 2015 updated guidelines from the International Committee on Allergic Diseases of Animals (ICADA). *BMC Veterinary Research.* 2015; 11:210. doi:10.1186/s12917-015-0514-6.
6. Michels, G. M., Walsh, K. F., Kryda, K. A., Mahabir, S. P., Walters, R. R., Hoovers, J. D. and Martinon, O. M. (2016), A blinded, randomized, placebo-controlled trial of the safety of lokivetmab (ZTS-00103289), a caninized anti-canine IL-31 monoclonal antibody in client-owned dogs with atopic dermatitis. *Vet Dermatol.* 27: 505-e136. doi:10.1111/vde.12364.

JACQUELINE DAVIS

Jacqueline Davis is a graduate of Morehead State University's veterinary technology program and has been working as the dermatology technician at the University of Tennessee since 2002. She is also a charter member of the Academy of Dermatology Veterinary Technicians. In her free time, Jackie likes to read, travel, and snuggle with her cat Daisy.

LET'S REVIEW...

1. What is the recommended withdrawal time for oral steroids prior to intradermal allergy testing?
 - a. 1 week
 - b. 2 weeks
 - c. 3 weeks
 - d. 4 weeks
2. What is the recommended withdrawal time for antihistamines prior to intradermal allergy testing?
 - a. 1 week
 - b. 2 weeks
 - c. 3 weeks
 - d. 4 weeks
3. What is the usual age range for age of onset of symptoms of atopy?
 - a. 6 months-1 year
 - b. 1-3 years
 - c. 2-4 years
 - d. 5-7 years
4. What antibody is associated with canine atopy?
 - a. IgE
 - b. IgG
 - c. IgM
 - d. IgA
5. What is the recommended initial dosage for cyclosporine for canine atopy therapy?
 - a. 3 mg/kg/day
 - b. 5 mg/kg/day
 - c. 7 mg/kg/day
 - d. 9 mg/kg/day



Visit VetMedTeam.com and log in with your Vet Med Team Profile.

Two hospitalizations. Three days.
Two completely different health problems.

ELLIE THE ARABIAN MARE

Heather Hopkinson, RVT

Presentation

On September 14, 2010, a 19-year-old Arabian mare “Ellie” was admitted to the North Carolina State’s Veterinary Teaching Hospital. The mare weighed 420 kg and presented to the Ophthalmology Service for evaluation of an acute melting corneal ulcer in the right eye. The owner had noticed a swelling in the ventral palpebra on September 12, and called her regular veterinarian who came out that afternoon and diagnosed an infected ulcer. The mare was put on Atropine drops, Triple Antibiotic drops, and Banamine. By that evening, the owner noted the mare’s eye was diffusely milky in appearance. The mare also had squamous cell carcinoma removed from her right eye in June 2010, and follow-up treatment with Mitomycin. She had a recent history of mild laminitis after eating too much hay, which the owner treated with Phenylbutazone and limited feed.

Assessment

Upon arrival to the NCSU-VTH, a physical exam was completed by a fourth year student, a resident, and a senior clinician. The initial physical examination showed abnormal findings in the right

eye. All other components of a physical examination were within normal limits. The left eye seemed comfortable with all other structure presented within normal limits. The left eye had mild blepharospasm, moderate conjunctival and sclera hyperemia, diffuse corneal edema and white cellular infiltrate. A 20 mL circular area of keratomalacia/melting ulcer in the axial cornea that takes up fluorescein stain, peripheral rim of white cellular infiltrate in the remainder of the cornea, deep furrow in ventrolateral ulcer, and the intraocular structures were unable to be assessed. A Complete Blood Count and Chemistry were obtained and all values were within normal limits. A corneal cytology and culture were also obtained. The cytology revealed rod-shaped bacteria, an increased number of degenerate neutrophils, and clumped epithelial cells. The culture revealed a heavy growth of *Pseudomonas aeruginosa*.

Diagnosis

The mare was placed in a stall and a subpalpebral lavage catheter was placed. At this time, the resident and senior clinician reviewed their findings with the owner. The mare received medical management

overnight including numerous eye medications, systemic antifungal, systemic antibiotic, a proton pump inhibitor, and pain management. She received 0.1 mL Voriconazole through lavage catheter every other hour, 0.1 mL Moxifloxacin through lavage catheter every other hour, 0.1 mL autologous serum through lavage catheter every other hour, 0.1 ml Atropine through lavage catheter two times daily, 1/2 tube Omeprazole orally every 24 hours, 400 mg Flunixin orally every 12 hours, 3,000 mg Fluconazole orally every 24 hours, and 960 mg Trimethoprim Sulfa orally every 12 hours.

The melting corneal ulcer presented with a soft gelatinous appearance to the cornea, with a tan undulant surface and excess tissue dripping onto the ventral palpebra. Depending on the severity and progression of the disease, conjunctival, corneal, and amnion grafts can all be used as surgical treatments. In this case, the lesion was too large to resect and replace with a corneal transplant. A conjunctival graft was not the best option in this case either because the lesion was too large; the mare would essentially be blinded once the graft scarred over. An amnion graft from frozen



Figure 1: Amnion graft being placed



Figure 3: Bulging eye with amnion graft intact

fetal membranes was another option. The amnion tissue provides stem cells directly to the damaged tissue to increase healing. Within 4–7 days, this tissue eventually breaks down and falls off. One drawback to this procedure was that the lesion would not be able to be visualized while in place, which may somewhat inhibit the medications from reaching the infected cornea. Enucleation would be the only definitively curative treatment and would be the final option if the infection could not be medically controlled.

On the morning of September 15, the mare was bright, alert, and responsive. Her physical examination was performed by a fourth year student and was within normal limits. The mare’s right eye showed little improvement and still seemed painful. It was decided by the ophthalmology service to continue medical treatment for one more day to see if the eye improved. The same protocol was maintained for another day including eye medications, systemic antifungal, proton pump inhibitor, and pain medication though out the day and night.



Figure 2: Final result after placement of amnion

Surgical Intervention

On the morning of September 16, the mare was quiet, alert, and responsive. Her physical examination was performed by a fourth year student and was within normal limits. Due to the slight worsening in appearance of the cornea and fear of perforation, the decision was made to place an amnion graft. The mare was sedated with a total of 15 mg of Detomidine and the procedure was performed standing in the stocks. A retrobulbar block was performed with 10 mL of lidocaine and the cornea was lavaged with proparacaine occasionally throughout the procedure. Three layers of amnion were laid down on the surface of the cornea and each sutured in place with 7-0 Vicryl suture. The first layer was tacked into place with seven simple interrupted sutures and then a simple continuous pattern around the circumference. The second and third layers were from the same graft tissue folded over on itself. The edge of the second and third layers were stretched over the first and sutured in place with a simple continuous pattern. Some excess amnion tissue was trimmed off (Figures 1-3). The mare recovered well from the procedure and was walked back to her stall. All medications were continued throughout the night and she was placed on intravenous fluids. Her

intravenous fluids were plain Lactated Ringers at a rate of 2-liters per hour for a total of 10-liters.

On the morning of September 17, the mare was quiet, alert, and responsive. Her physical examination was performed by a fourth year student and was within normal limits. The mare’s eye seemed really painful and she was unable to close her eye fully. The student noticed during his examination that the eye had potentially perforated, the amnion graft was still in place but bulging off the surface, and the globe was much softer than that of the left eye (Figure 4). The perforation of the right eye was confirmed by the senior clinician. The raging infection that was causing the corneal ulceration combined with the concurrent uveitis gradually had been breaking down the cornea. With the large area of ulceration and diseased cornea, the prognosis for fixing this eye was poor. The most effective and curative treatment in this case was enucleation. All topical eye medications and oral Fluconazole were discontinued and the enucleation was scheduled for later in the day.

The right eye was prepared in a sterile manner. The mare was anesthetized with triple drip (ketamine, guaifenesin, and xylazine in 1-liter of 5% dextrose) and positioned in left lateral recumbency with the head stabilized with a slight tilt to expose the eye. A retrobulbar block was

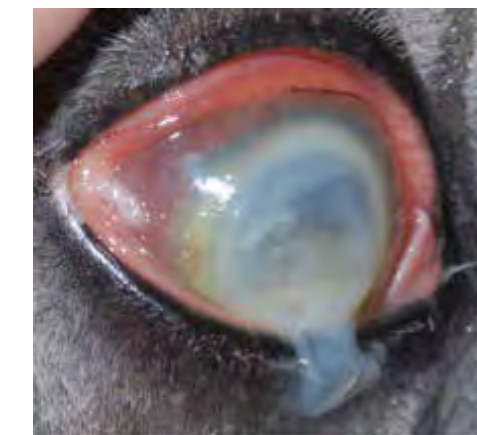


Figure 4: Perforation of the globe

performed with 10 mL of bupivacaine as well as a palpebral block with 5 mL of bupivacaine. The dorsal bulbar conjunctiva was grasped with Bishop Harmon forceps and transected with Stevens tenotomy scissors approximately 4 mL posterior to the limbus, dissecting beneath the conjunctiva and Tenon's capsule to the sclera. This incision was continued 360 degrees adjacent to the globe capsule. The extraocular muscle insertions and optic stalk were transected with equine-curved enucleation scissors and the globe was removed. Sterile gauze and 0.2 mL Epinephrine diluted in 0.8 mL of BSS was placed in the orbit to assist with hemostasis. The eyelid margins were excised with Metzenbaum scissors. The conjunctiva, nictitating membrane, and the medial caruncle were subsequently removed. The deep layer of periorbital tissue and the subcuticular layer were closed with separate simple continuous patterns using 3-0 Vicryl. The skin was apposed with simple interrupted and cruciate sutures using 3-0 Nylon. The mare had a difficult and prolonged recovery but was eventually walked back to her stall. She was placed on plain Lactated Ringers intravenous fluids at a rate of 2-liters per hour throughout the rest of the night.

On the morning of September 18, the mare was bright, alert, and responsive. Her physical examination was performed by a fourth year student and was within normal limits. She seemed comfortable with all the sutures in place and minimal discharge. The mare did seem slightly stiff which may have been a result from her rough recovery from her enucleation surgery. She was continued on ½ syringe Omeprazole orally every 24 hours, 400 mg Flunixin Meglumine orally every 12 hours, and 960 mg Trimethoprim Sulfa orally every 12 hours.

Discharge

Over the next couple of days the mare seemed bright and more comfortable. Her feed intake was increased in increments and she was allowed to be hand walked with grazing. By the time she was discharged

on September 20, the mare was on full feed and seemed comfortable. She was sent home on the following medications at the same dosages as previously mentioned: Trimethoprim Sulfa, Flunixin Meglumine Paste, and Omeprazole. The owner was informed that the mare's sutures needed to be removed in 14 days.

Re-admittance

On September 22, the owner noticed that the mare was looking distended. On September 23, the mare presented to the North Carolina State University Equine Emergency Service for lethargy, inappetence and possible endotoxemia, with the owner noting she was not acting normally. She was seen by the referring veterinarian who did a colic workup. All vitals were found to be within normal limits and no net reflux was obtained when a nasogastric tube was placed. Nothing abnormal was felt on rectal palpation at that time.

Upon arrival to the NCSU-VTH, a physical exam was completed by a fourth year student, a resident, and a senior clinician. The mare's abdomen appeared distended and she was depressed and dehydrated. On presentation she had dark tacky mucous membranes with a capillary refill time of three seconds. Her pulse was 44 beats per minute and her respiratory rate was 16 breaths per minute. At this time a 14 gauge 5.25 inch over the needle intravenous catheter was placed in the mare's left jugular vein, and secured with suture (2-0 Ethilon on a straight needle). Upon ultrasonic evaluation, marked amount of free fluid was seen in the left ventral flank area with 4-5 inches of space seen between the spleen and body wall. An abdominocentesis was performed and the fluid collected appeared to be urine. Fluid analysis revealed a creatinine of 28.8 mg per deciliter, while serum creatinine was 16.3 mg per deciliter. An Argyle 20 inch straight thoracic tube was placed to the right of midline. A Heimlich valve was attached and the free fluid was caught in a 10-liter bucket below. A urinary catheter was also

placed and hematuria was expelled from the bladder. To facilitate the movement of fluid, the Foley catheter was replaced with a nasogastric tube, which increased the flow rate of the fluid. The total amount of fluid extracted from her abdomen and bladder was about 84-liters. During fluid removal, heart rate was monitored for rate and rhythm. After partial bladder evacuation, a scope was passed into her urethra to the bladder and a rent was seen ventrally at the apex of the bladder. The site was difficult to assess due to inadequate distension of the bladder. Both ureters were expelling urine into the trigone of the bladder normally. The mare was moved from the stocks and placed in a stall. She was given Banamine 450 mg intravenously, Enrofloxacin 2,250 mg intravenously, and Potassium Penicillin 9,900,000 IUs intravenously. Hay, pellets, and water were offered. She was disinterested in the food but drank some water. Food was to be pulled at 4 a.m. with possible surgical correction of the rent occurring the following afternoon. Presenting Complete Blood Cell Count, Chemistry, and Venous Blood Gas: Packed Cell Volume 53 percent; Protein 8.7 grams per deciliter; Fibrinogen 600 mg per deciliter; Hyperkalemia (6.2 millimoles per liter); Hyperglycemia (245 mg per deciliter); Azotemia (BUN 143 mg per deciliter, Creatinine 16.3 mg per deciliter); Creatine Kinase was too high to register, but with dilution it was 1,812 units per liter; and the Venous Blood Gas was within normal limits.

The clinicians elected to take the mare to surgery to repair the ruptured bladder the next day. The mare was sedated with 440 mg of Xylazine intravenously and then induced with 50 mg of Midazolam and 1,200 mg Ketamine intravenously. She was then placed in dorsal recumbency. A 20-cm midline incision was made 5 cm caudal to the umbilicus and extended to the teats. The subcutaneous tissue and abdominal muscles were incised down to the linea alba. The linea alba was incised and upon entry into the abdomen, more than 25-liters of red-tinged fluid was expelled



Figure 5: Lateral view of left front

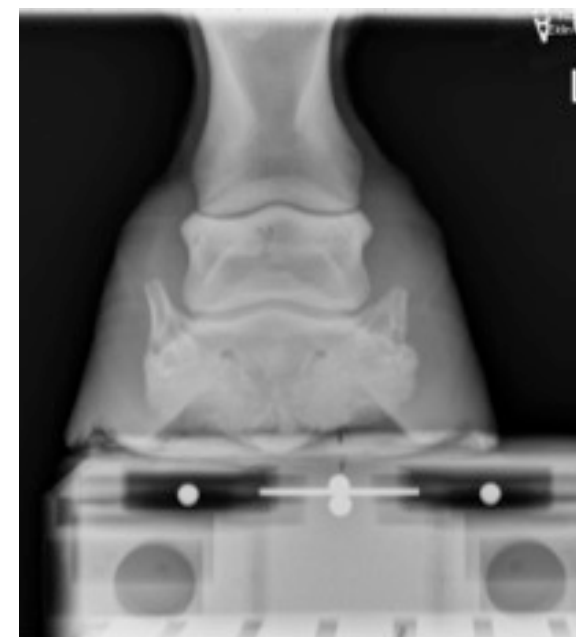


Figure 6: DP view of left front

and suction was applied. After partial evacuation of the peritoneal space, the bladder was located. The ventral aspect of the bladder was grasped and elevated for evaluation. A focal area of necrotic and fibrinous tissue was seen on the serosal surface at the apex. A 4-cm rent was located within the tissue and the cranial aspect of the opening was incised. The edges of the rent were freshened and then apposed with a simple continuous pattern using 2-0 Vicryl. An inverting pattern (Lembert) was applied over the simple continuous pattern using 2-0 Vicryl. The bladder was replaced into the abdomen and the peritoneal space was suctioned. The linea alba was closed with a simple continuous pattern using #3 Vicryl. The subcutaneous layer was closed using a simple continuous pattern and 2-0 Vicryl, with occasional tacking to the linea alba to decrease dead space. The intradermal closure was a subarticular pattern with 2-0 Vicryl. Stainless steel staples were placed along the incision. A urinary catheter was placed and recovery was slow but uneventful. The mare was slightly ataxic afterwards.

Recovery

The following morning the mare was quiet, alert, and responsive. She did not have any appetite overnight but did eat a fair amount of grass when taken outside. Postoperatively she urinated a fair amount the entire night. Her ventral abdominal drain was pulled, after ultrasound revealed only a small amount of fluid within the

abdominal cavity. After the drain was pulled out, approximately ½ liter of serosanguinous fluid came out of the drain incision site. A bandage was applied to the area to help soak up the residual amount of fluid left in the abdomen. She was continued on the previous medications and Omeprazole was added to her regimen. She had been on intravenous fluids (Lactated Ringers Solution) at 2-liters an hour. The mare also had ice boots placed on all four limbs to prevent laminitis.

Over the next several days, the mare's blood work continued to improve and her incision was healing well. Her appetite continued to increase. On the morning of September 28, the mare seemed a little reluctant to move and had increased digital pulses in the front limbs only. Radiographs showed that there was severe palmer rotation of the distal phalanges with a very thin sole at the distal margins and rotation of P3, which was more severe on the left forelimb. At this time corrective shoeing was placed (Figures 5,6).

Over the next few weeks the mare continued to improve. Her blood work had returned to normal before discharge. She had been weaned from most of her medications and upon discharge she was on Enrofloxacin administered three grams by mouth daily and Phenylbutazone 1-2 grams by mouth every 12 hours as needed. The mare was discharged on October 9.

Conclusion

This case had many components that required skilled nursing. For all cases admitted to the NCSU-VTH, baseline vital signs and a history are obtained. Beyond those basics, each case is treated individually and is dependent on clinician discretion. All patients that are admitted to the NCSU-CVM receive a physical examination and are assigned a pain score at least twice a day. This mare was a unique and interesting case because she was in the hospital twice, within three days, for two completely different problems. **J**

NAVTA Discount Plans



NAVTA provides affordable, easy-to-use health, wellness and lifestyle discount programs that are a great fit for our members.

Understanding the Plans

Taking care of your dental and vision needs doesn't have to be expensive. With our plans, you have access to major discounts and easy-to-see savings on regular, specialty and cosmetic dental treatment, vision services and more. And as an added bonus, you will also receive DialCare's premier around-the-clock telemedicine services! **Below is a comparison of what's included in each plan.**

Products	NAVTA Standard Discount Plan	NAVTA Premier Discount Plan
Dental	🐾	🐾
Vision	🐾	🐾
Prescription	🐾	🐾
Telemedicine	🐾	🐾
Labs	🐾	🐾
Child and Elderly Care	🐾	🐾
Diabetic Care Supplies	🐾	🐾
Identity Theft		🐾
	Member Plan Rate: \$17.00/mo	Member Plan Rate: \$25.00/mo

Have questions or need more information?

THIS IS NOT INSURANCE.

Call: (833) 320-5464

or visit www.alerabenefitperks.com/NAVTA

Dental

Save 20% to 50% on most dental procedures including routine oral exams, unlimited cleanings, and major work such as dentures, root canals, and crowns through one of the largest dental networks nationally with a focus on neighborhood dentists.

Vision

Members save 20% to 40% off the retail price of eyewear with the EyeMed Vision Care Access Plan D discount program through the Access network. Members are eligible for discounts on exams, eyeglasses and contact lenses from more than 90,000 providers nationwide including independent optometrists, ophthalmologists, opticians and leading optical retailers such as LensCrafters®, Sears Optical®, Target Optical®, JCPenney® Optical and most Pearle Vision® locations.

Prescription

Members have access to average savings of 55% to 85% off the retail price of generic drugs and 30% to 65% off the retail price of brand name drugs at over 60,000 locations nationwide, with no limits on use or how much money members can save. This free card can be used by the entire family!

Telemedicine

- » DialCare is a modern, easy-to-use telemedicine solution for non-emergency illnesses and general care. Members and their families have direct access to state-licensed and fully credentialed physicians, via phone or video consultations, to receive treatment and advice for common ailments, including colds, the flu, rashes and more.
- » Physicians are available 24 hours a day, 365 days a year, allowing members and their families convenient access to quality care from home, work or on-the-go.

Labs

- » A simple blood test is necessary for the prevention or early detection of diseases. The earlier a problem is identified, the easier and more likely it is to be treated.
- » DirectLabs (DLS) is the leader in direct access laboratory testing.
- » DLS offers a wide variety of important health and wellness blood chemistry tests at discounted prices, saving members 10% to 80% off regular retail pricing at over 3,000 certified labs nationwide.*

Take charge of your health and wellness and order today! No doctor's visit required.

*Not available in HI, MD, NY, NJ, RI or MA

**ND, SD and VT offer Specialty Lab testing only

Disclosures: THIS PLAN IS NOT INSURANCE and is not intended to replace health insurance. This plan does not meet the minimum creditable coverage requirements under M.G.L. c.111M and 956 CMR 5.00. This plan is not a Qualified Health Plan under the Affordable Care Act. This is not a Medicare prescription drug plan. The range of discounts will vary depending on the type of provider and service. The plan does not pay providers directly. Plan members must pay for all services but will receive a discount from participating providers. The list of participating providers is at www.alerabenefitperks.com/NAVTA. A written list of participating providers is available upon request. You may cancel within the first 30 days after effective date or receipt of membership materials (whichever is later) and receive a full refund, less a nominal processing fee (nominal fee for MD residents is \$5, AR and TN residents will be refunded processing fee). Discount Plan Organization and administrator: Careington International Corporation, 7400 Gaylord Parkway, Frisco, TX 75034; phone 800-441-0380.

This plan is not available in Vermont or Washington.

Child and Elderly Care

- » Resources for Living (RFL) provides telephonic counseling and referrals for everyday needs. Worklife Consultants help members balance the demands of family, job and personal needs.
- » Services include child care, elder care and care for adults with disabilities, caregiver support, school and college planning and convenience services.

Diabetic Care and Supplies

Better Living Now, Inc. (BLN) is a managed care provider of health care products and services, specializing in the needs of patients with chronic conditions. BLN brings these values to the member:

- » Free shipping and choice of free gift with first order
- » Durable Medical Equipment – 20% to 30% off of retail price
- » Disposable Medical Supplies – 20% to 40% off of retail price

Identity Theft

InfoArmor will proactively defend what matters most, members and their families!* InfoArmor's PrivacyArmor service provides proactive and industry-leading identity monitoring to detect fraud sooner than competitors. The InfoArmor team includes Privacy Advocates who are certified and trained to be experts in identity theft restoration. If suspicious activity is detected, a privacy advocate will contact the member by phone and operate as a dedicated case manager from start to case completion.

*The membership plan includes the primary enrollment member plus up to four additional family members living in the household.

Prescriptions	Avg Retail	Avg Member Price	Savings	% Savings
ATORVASTATIN 40 MG TABLET 30 High Cholesterol	\$66.20	\$26.00	\$40.20	61%
AMLODIPINE BESYLATE 5 MG TAB 30 High Blood Pressure	\$27.28	\$18.22	\$9.06	33%
CLOPIDOGREL 75 MG TABLET 30 Heart/Stroke Prevention	\$54.96	\$27.91	\$27.04	49%

Celebrating the **WINN FELINE FOUNDATION**



For 50 years, no organization has contributed more to the health and welfare of cats as the **Winn Feline Foundation**. Winn is the only non-profit organization on the planet that exists solely for the purpose of funding cat health studies. And Winn is equal opportunity foundation – wherein all cats benefit, from domestic shorthair and pedigreed cats living in loving homes to community cats to cats in animal shelters.

The New Jersey-based foundation was named in honor of the Cat Fanciers' Association longtime attorney and advisor, Robert H. Winn, who founded the organization in 1968.

"The Winn Feline Foundation has played a huge part in the health and well-being of our feline friends over the last 50 years. Their generosity has helped many cats and their pet parents by supporting research relating to feline diseases and health care, so they can live happier, healthier and longer lives. They do tremendous work," says Julie Legred, CVT, executive director, National Association of Veterinary Technicians in America

Joan Miller, recent recipient of the American Veterinary Medical Association Humane Award, honoring her lifetime of work and passion in support of felines, was president of Winn for 16 years and served for 20 years on the Board. She recalls when, "A really devastating disease was happening in the cat world. At the time, the disease didn't even have a name; we called it the lymph node illness. We knew next to nothing about it." That disease turned out to be feline leukemia (FeLV).

To date, Winn has funded over \$6 million in health research for cats and has provided funding to help describe diseases that today we take understanding for granted, including FeLV, Feline Immunodeficiency virus (FIV), and Feline Infectious Peritonitis (FIP).

Winn has many times funded Dr. Niels

Petersen at UC Davis School of Veterinary Medicine, now professor emeritus; veterinarians at the Cornell Feline Health Center and others who unraveled that mystery we now call FIP.

Pedersen says, "For my infectious disease research in general, particularly with FIP (feline infectious peritonitis), Winn Feline has been right there with me. Winn's support has made a significant difference."

"FIP wasn't only not understood, it was misunderstood," says Susan Gingrich, a Winn Feline Foundation former Board member, who created the Bria Fund in 2005. The Bria Fund supports studies for FIP.

From the time FIP was discovered, Winn made a commitment find a way to deal

with this devastating fatal disease. Pedersen says, "Finally, today we have a very good understanding of FIP. I've been chasing FIP for a very long time. I refer to it as a worthy adversary. There is now a bright light at the end of the tunnel. We now know what has to be done."

"The very fact that we're talking about a possible treatment for FIP is amazing to me," adds Winn's immediate past Board President Shila Nordone, PhD.

In 2002, I began the Ricky Fund to support funding, understanding, and ultimately finding a treatment for feline hypertrophic cardiomyopathy (HCM), by far the most common heart disease in cats.

Due to the dollars raised, HCM is far better understood, and an inexpensive genetic test (using a cheek swab) can determine if Ragdoll or Maine Coon cats are carrying a gene defect for HCM. As a result, more careful breeding has reduced the disease in those breeds.

Going back in time, in the late 1970's another heart disease, dilated cardiomyopathy (DCM), was commonly causing blindness and even death among cats.

Veterinary cardiologists were working on a treatment. In addition, Dr. Paul Pion, then a veterinary cardiology resident at the UC Davis School of Veterinary Medicine, put some puzzle pieces together in his head. He had a hunch, which at the time was

considered thinking outside the box.

To prove his idea, he required money. The Winn Feline Foundation decided to take a chance on Pion's hunch that there simply wasn't enough taurine in cat foods. Pion proved to be right. Taurine is an essential amino acid which dogs and people can produce on their own – but cats cannot. Today, all pet food companies, industry wide, understand how much taurine is required for cats. Since Dr. Pion's discovery, veterinarians hardly ever diagnose DCM.

Winn funded studies first demonstrated that diabetes in cats is best treated with a high protein/low carbohydrate diet (which was against

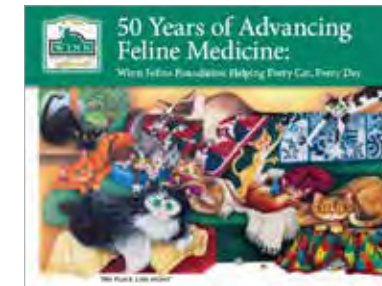
the common knowledge of the time), also with insulin, and with simultaneous gradual weight loss. A significant number of diabetic cats can even go into remission.

Winn funded studies proved why measuring blood pressure in cats is important, and how to do it. Winn supported studies which have proven specific treatments to support cats with several types of cancer. Winn has also funded studies to make life more tolerable for cats in animal shelters. In addition, Winn has funded numerous studies to better understand outdoor community (feral) cats. The list of Winn funded studies goes on and on.

Winn is currently funding several studies on how stem cell therapy may benefit cats with kidney disease or other medical problems, and one Winn-funded study seeks to learn if cats can play a role in helping autistic children.

The Winn Feline Foundation was an early supporter of the notion to spay/neuter cats early to control population numbers, based on science that Winn funded. Winn was an active supporter of the American Association of Feline Practitioners Cat Friendly Practices, and the Fear Free initiative, including Fear Free Healthy Homes, which all clearly benefit our feline friends.

"Much of what veterinarians do every day was first discovered by research funded



Book Cover: 50 Years of Advancing Feline Medicine: Winn Feline Foundation Helping Every Cat, Every Day by Jamie Perry.

by Winn," says longtime Winn scientific advisor and Board member Dr. Brian Holub, chief medical officer of VetCor, who also remains a private practitioner. "Veterinarians and veterinary nurses may have no idea of the role Winn has played; Winn is the best kept secret in cat health."

"Cat owners don't know about Winn either, or the role Winn has played in the everyday life of their cats," says Dr. Vicki Thayer, Winn's Executive Director.

Winn Feline Foundation Programs Veterinary Honor Roll and Veterinary Technician/Nurse Honor Roll
Winn set up a program several years ago where clients can pay \$100 to honor their veterinarians or veterinary nurse (technician). The honored veterinary professional receives a beautiful plaque.

The Pet Memorial Program
The Pet Memorial Program offers veterinary professionals an opportunity to

LEARN MORE ONLINE

Winn Feline Foundation Website
www.winnfelinefoundation.org

Ways to Donate
www.winnfelinefoundation.org/giving/ways-to-give

Winn Feline Foundation Programs:

- **Veterinary Honor Roll**
www.winnfelinefoundation.org/programs/vet-honor-roll
- **Veterinary Technician/Nurse Honor Roll**
www.winnfelinefoundation.org/programs/technician-honor-roll
- **Pet Memorial Program**
www.winnfelinefoundation.org/programs/vet-pet-memorial
- **Cures 4 Cats Commemorative Booklet PDF**
www.winnfelinefoundation.org/about-us/mission-statement

reassure clients that their beloved cats have not been forgotten. At the same time, it supports health studies that benefit the lives of all cats. Both large and small donations are welcome.

Cures 4 Cats Day
To celebrate all of these accomplishments, Cures 4 Cats Day will be held annually on October 21. Winn also offers a free newsletter to keep cat fanciers, veterinary professionals and cat caretakers up to date on the latest outcomes of cat research. A free PDF commemorative booklet is available, celebrating 50 years of helping every cat, every day. The PDF download is free and a copy of the actual booklet is \$5 to defray mailing costs.

"It's about time that America's most popular pet receives the attention deserved," adds Thayer. "We need to enhance awareness and celebrate the importance of cats in our lives." J

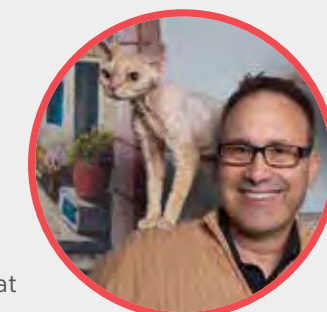


Top: Dr. Niels Pederson at 2017 Winn Feline Foundation Symposium

Bottom: Steve speaking about Joan Miller with Winn Board member/Scientific Advisory Board member Dr. Brian Holub

ABOUT STEVE DALE

Steve Dale, CABC, has been a member of the Winn Feline Foundation Board of Directors for thirteen years. Steve is a founding member of the CATalyst Council, and serves on the Board of Directors of the Human Animal Bond Association. He's a contributor to several books including "The Cat: Clinical Medicine and Management," edited by Dr. Susan Little; and "Treatment and Care of the Veterinary Geriatric Patient," edited by Dr. Mary Gardner and Dr. Dani McVety; and he edited "Decoding Your Dog," authored by members of the American College of Veterinary Behaviorists. Steve is the host of three radio talk shows, and he speaks at veterinary and animal welfare conferences around the world. His website is www.stevedale.tv.



» DIAGNOSTIC METHODS FOR THE DERMATOLOGY PATIENT

Sandra Grable, AAS, CVT, VTS (Dermatology) Charter Member
University of Illinois College of Veterinary Medicine

LEARNING OBJECTIVE:

Readers should gain an understanding of the employment of various diagnostic techniques, required materials needed and their appropriate preparation for skin related issues during a veterinary dermatology examination.

Introduction

Sample collection for skin conditions is a mainstay in any dermatology specialty clinic, however; it easily can be performed in any general practice and should never be disregarded. How the patient presents and visible lesions should dictate where samples are taken from and the methodology of sample collection. The technician or assistant can facilitate the examination by collecting samples for the clinician (or technician) to evaluate before the veterinarian even enters the room. Knowing which collection method to use for which lesion is present and how to prepare the collection is essential.

Sampling of the skin is performed in various ways from impressions, tape, and scrapes to even using the wooden portion of a cotton-tipped applicator. It is an

inexpensive and relatively quick method for the clinician in dermatology cases to determine the presence of yeasts (most commonly *Malassezia* spp.), bacteria, neoplastic cells, acantholytic keratinocytes, white blood cells, and parasites, making it an invaluable diagnostic tool that should never be overlooked!¹

Diagnostic materials needed for the dermatology patient are easily accessible and reasonable in cost. For a general list of the most common materials needed, please refer to Table 1.

Cytology

Impression Cytology

Impression cytology is probably the most favored sampling method for microscopic evaluation as it yields a nice clear view without a lot of background debris. The lesions for impressions need to be moist enough to enable the sample to transfer to the glass slide easily, so this method is generally reserved for lesions that are draining, crusted, ulcerated, erosive or lichenified.² Please refer to Table 2 for a generalized guideline of lesions and sampling methods. Impression cytology is accomplished by simply placing a glass slide directly onto a lesion. For crusts or epidermal collarettes, gently lift the crust or the edge of the collarette with the corner

TABLE 1. Common diagnostic materials needed for the dermatology examination.

Frosted edge glass slides
#10 Scalpel blades
22mm x 22mm cover slips
Clear acetate tape (prescription label tape), 1-inch width
Packing tape, 1-inch width
6-inch cotton-tipped applicators
Stain: Diff-Quick® Polychromatic Multiple Stain (PMS), (Delasco Labs, Council Bluffs, IA)
Culturettes
6cc syringes
Dermatophyte test media
22g and/or 23g needles
Hemostats
Mineral oil
Immersion oil
Flea comb
Wood's lamp

TABLE 2. General guidelines for diagnostic methods of skin lesions and affected areas^{1,2,4,7}

Lesion or Area	Description	Possible Methods
Alopecia	Complete or partial hair loss	Tape, Trichogram, DTM
Comedones	Follicles plugged with keratin and sebum (blackheads)	Tape, Scrape
Crusts	Dried exudates on the skin surface (scab)	Tape, Trichogram, Impression, DTM
Epidermal Collarette	Circular area of scale: remnants of pustules	Tape, Scrape, Impression
Erosion	Loss of the superficial layer of the epidermis by friction or pressure	Impression
Erythema	Redness of the skin	Tape, Scrape
Excoriations	Abrasion of the skin due to scratching	Tape, Scrape
Lichenification	Hardening/thickening of the skin. Lines of the skin are exaggerated	Tape, Impression
Nodules	Solid lesion, greater than 1 cm	FNA
Papule	Elevated, solid lesion less than 1 cm	Tape, Indirect Impression, Scrape
Pustule	Raised, less than 1 cm superficial lesion filled with purulent material (pimple)	Tzanck prep, Scrape
Scale	Loose skin cells (dandruff)	Tape, Trichogram, DTM

of the glass slide. Press the slide under the crust or newly exposed moist area. Pustules may be sampled this way by gently inserting a small needle (i.e. 23 gauge) to lift the top of a pustule and then lightly press the slide onto the extruded contents. This is sometimes referred to as a Tzanck preparation or indirect impression. If only one or very few pustules are present, it is best to leave these pustules alone and intact since a biopsy may be indicated. Pustules are the ideal lesion to biopsy in some cases. A needle may also be used on papular lesions and squeezed to collect exudate onto the slide. Allow the impression sample to air dry and Diff-Quik® the slide using the fixative along with stains one and two, followed by a gentle rinse with tap or deionized water. Prop the slide up and allow it to air dry.

Tape Cytology

Tape cytology is often used for dry lesions and on areas where a glass slide would be prohibitively difficult or a possible safety concern (breaking the slide while

sampling), such as interdigital, intertriginous or periorbital areas. Clear acetate tape (prescription label tape), is often used because it comes in a one-inch width, the same width as a glass microscope slide. It is transparent which makes it ideal for viewing under the microscope and is very convenient. Alternatively, clear packing tape can be substituted and cut to fit a glass slide, but is not as time efficient. A more expensive, but effective alternative is adhesive glass slides in which you remove the cover paper and press onto the affected lesions. Tape cytology is heavily utilized because of its ease and convenience of sample collection, but there are some drawbacks worth mentioning. Tape cytology can require experience viewing under the microscope because a lot of the background debris and melanin granules can take up stain and may mimic cocci or rod bacteria to the untrained eye. Keep in mind that cocci are usually in chains, clusters or pairs and, although possible, it is not common to see large numbers of random (single) cocci. In

addition, the bacteria should be uniform in size and shape comparatively; the debris will be variable. Bacteria should also have inflammatory cells in close proximity or be engulfed by the inflammatory cells. The microscope usually needs to be repeatedly focused with every movement due to the varied planes caused by trapped air bubbles, scale, and hairs. To perform tape cytology, press a piece of tape no longer than the glass slide directly on the lesion using a thumb on the back of the tape and press down firmly. Lift and press the area of interest several times. Material collected should be visible on the tape. Place the tape on a glass slide and affix the portion of the tape that is closest to the frosted edge and press firmly on this end of the tape. Leave the rest of the tape loose, however, to allow stain to get underneath the sample. Stain the slide by skipping the fixative of the Diff Quik®. Placing the tape cytology in the fixative will dissolve the adhesive on the tape and make it brittle and curl, rendering it useless; the sample will more than likely need to be recollected.

This program is NOT RACE APPROVED. However, Veterinary Assistants can take the exam at VetMedTeam.com and receive 1 CE credit that can be applied toward their AVA designation.



Either the first and second stain or just the second may be used. It is the author's preference to use the second stain only (Figure 1). An alternative is to directly place a drop of the number two Dif-Quik® stain on to the slide using a disposable pipette and then affix the tape to the stain and slide. Do not rinse. Dry the slide by using paper towels and squeeze out the excess stain and press and flatten out that tape as smooth as possible.

Another beneficial way to use tape for cytology is to look for certain parasites instead of employing the use of a blade for skin scrapes. Large, surface parasites as in pediculosis infestations (lice), *Cheyletiella* spp. (walking dandruff), *Lynxacarus radovsky* (cat fur mites), *Otodectes cyanotis* (ear mites that may be outside the ear canal especially near the head and neck), *Dermanyssus gallinae* (poultry mites that also affect dogs, cats and humans) are easily visible using this method.¹ Although not necessary, a drop of mineral oil may be placed onto a glass slide prior to affixing the tape which seems to lend a clearer view under microscopic examination. Tape the lesional areas and place either on top of the mineral oil or directly onto a glass slide. If using mineral oil, dab away any excess oil. Fleas may be caught using tape as well by placing it on a glass slide to show skeptical owners.

A fairly recent sample collection technique for *Demodex* mites showed it to be more sensitive as deep scrapings which may also use this tape method, however the technique has a slight variation.³ Place a piece of acetate tape on the lesion and squeeze the skin. Place the tape on a glass slide. The author finds that this methodology for the collection of *Demodex* mites is not necessarily as rewarding and prefers deep skin scrapings.

Cotton-tipped applicators

An ear mite preparation for *Otodectes cyanotis* is prepared by swabbing the ear canals with cotton-tipped applicators and placing the material in a few drops of mineral oil on a glass slide with a cover slip over the top.

Otodectes mites can also be found on the head, neck and caudal areas. Superficial scrapings and tape preparations can be used in those areas to find the mites.

Dry scrape cytology

Tape cytology can take a bit more effort and experience to view microscopically; alternatively, use dry scrape techniques for areas that might not be quite moist enough to perform an impression and dry scrape cytology can be used instead.

Stick cytology

This method is used for gently scraping areas with the opposite end of a cotton-tipped applicator swab or toothpick. This is a good option to use around claw beds that have material around the base and bed of the nails (Figure 2). Some users of this method will break the applicator in half to create an even sharper, angled edge, but be gentle so not to harm the patient. Material collected on the wooden stick is then rolled out onto a glass slide, pressing firmly (Figure 3). Lightly heat fix the slide and stain with Dif-Quik® using the fixative and two stains, rinse and air dry.

The swab end of the cotton-tipped applicator can also be used for swabbing moist areas that are otherwise hard to sample with a direct impression. Intertriginous and interdigital areas that are moist are excellent areas for sampling with this method. Gently swab the areas between the folds and spaces and roll them onto a glass slide. For the ear canal, gently go into the canal just to the horizontal canal to collect the sample. With the frosted edge of the slide facing you and pointing down in a vertical position, roll the right ear swab down the right side of the glass and the left ear swab down the left side of the glass slide. Preparing the ear slide in this manner makes it easier for the person reading the slide (one straight line per ear) instead of uses squares or making an "L" or "R" rolled out onto the slide. Also, if done this way every single time, there is no need to label the slide left vs. right. For the swab method, these slides

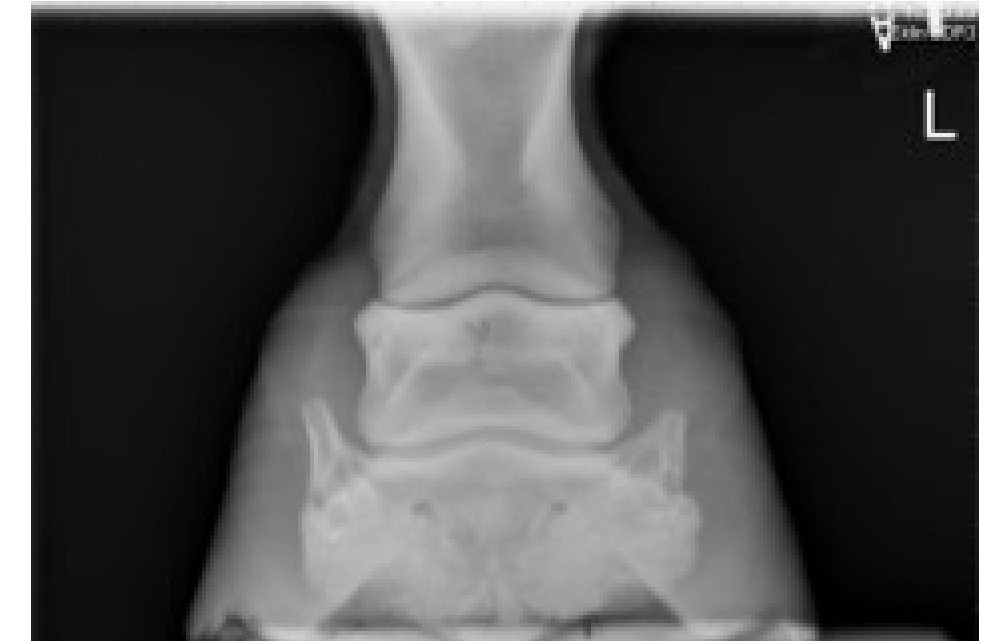
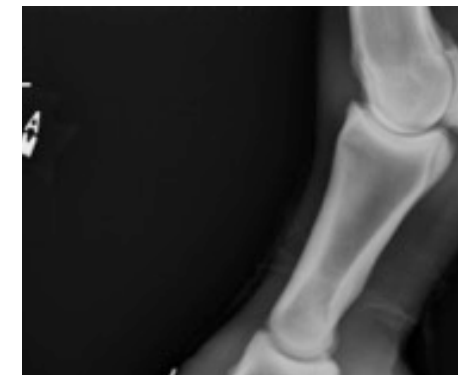


Figure 4 (top left): Squeezing the skin prior to a deep skin scraping

Figure 5 (bottom left): Deep Skin scraping

Figure 6 (right): Plucking hairs for trichography

are generally lightly heat-fixed, then stained with Dif-Quik® using the fixative and two stains, gently rinsed with tap or deionized water and propped up to air dry.

"Bread and Butter" cytology

This technique requires the use of a #10 scalpel blade that can be lightly scraped over areas to collect material. Place the material on a glass slide working it into the slide by pressing down and smearing it so it affixes to the slide. Lightly heat fix and stain with Dif-Quik® using the fixative and two stains, gently rinse and air dry. The material on the blade is the "butter" and the slide is the "bread." When transferring the sample to the slide it is like buttering a piece of bread.

Skin Scraping

Skin scrapings are performed to look for the presence of parasites. A new, #10 scalpel blade, mineral oil and 22mm x 22mm cover slips and glass slides are all that are required. Skin scrapings can be performed one of two ways, either deep or superficially.

Deep Skin Scraping

Deep scrapings are used when *Demodex* mites are suspected since most species live in the hair follicles or sebaceous glands. Some prefer to dull their blades before scraping, but it is not necessary if you are cautious. Before scraping, place several drops of mineral oil onto the glass slide. Dip the blade into the oil before scraping, this will help adhere the material collected to the blade during the scrape. To perform a deep scraping, squeeze the area to be scraped to help bring the mites more to the surface. Some will scrape while squeezing, but it may be helpful to squeeze first, then hold the skin taut with a thumb and index finger to perform the scrape, then repeat (Figure 4). While scraping, hold the blade at a 45° angle away from the direction you are scraping to the skin and scrape in the direction of hair growth until capillary oozing is achieved (Figure 5).¹ Scoop the material onto the blade and transfer to the glass slide. The edge of the slide can be

used to help scrape off the material onto the slide and move it more centrally once on the slide. Place a glass cover slip over the material. As mentioned previously, acetate tape may be used as an alternative technique for *Demodex* mites, as well as trichography, mentioned later.

Superficial Skin Scraping

Superficial scrapes are used for parasites that are in the upper most layer of the skin, the stratum corneum, (i.e. *Sarcoptes scabiei*, *Demodex gatoi* and *Cheyletiella* spp.). The same materials and technique are used for superficial scrapes but, unlike deep scrapes, squeezing the skin prior to or scraping until you get some blood is unnecessary. The amount of pressure applied to the skin is less as well, and the area scraped should encompass a larger area. Collect the material onto the blade in a scooping motion and transfer to a glass slide and place a cover slip over the material.

Some dermatology specialty clinics prefer a spatula for scrapings rather than blades.

Figure 1 (top): Acetate tape preparation

Figure 2 (middle): Sample collection from the claw bed using the opposite end of a cotton-tipped applicator (stick cytology)

Figure 3 (bottom): Transferring collected material onto the glass slide



FEAR FREE 2018 WORKSHOP SERIES FEAR FREE IN PRACTICE

A one-day workshop presented by Fear Free and NAVTA

Registration Details:



Individual
\$139/person



Group of 3+
\$119/person

Speaker Information:

Jonathan Bloom, DVM

Monique Feyrecilde, LVT, VTS (Behavior)

Joanne Graham, CVPM, SHRM-CP, CCFP

Natalie Marks, DVM

Debbie Martin, RVT, CPDT-KA, KPA CTP, VTS (Behavior)

Kathryn Primm, DVM

Julie Reck, DVM

Heidi Reuss-Lamky, LVT, VTS (Anesthesia & Analgesia, Surgery)

What's Included:

- Admission to symposium with access to Dr. Marty Becker, all speakers & sponsors
- Ability for Q&A with Dr. Becker
- Ability to visit sponsor tables
- Coffee service on arrival
- Refreshments throughout the day
- Complimentary lunch
- Fear Free USB Stick packed with lecture information and extras
- Certificate of attendance with 7 hours of RACE approval
- Special discounted rate for Fear Free certification program offered to attendees only
- Fear Free gift

Hosted by Dr. Marty Becker, this year's series is all about going deeper into the Fear Free practice. Let a world-class team of lecturers teach you how PVPs and sedation can give you and your patients a Fear Free experience even with time constraints or emergency situations. This year will include a lecture dedicated to implementation and communication of Fear Free to your clients and your team.

We've also added three hours of in-depth case studies to the program. Learn how planning and arrival protocols can set your clients and your staff up for success. See a routine Fear Free exam and vaccination from our experts. Find out more about anesthetic induction and how to properly communicate the procedure's details with your clients.

We hope you join us for this all-new 2018 event series, your patients - and the clients that love them - will be glad you did!

DATE	LOCATION	COMING TO A CITY NEAR YOU!
January 14	Dallas, TX	
February 18	Kansas City, MO	
March 18	Salt Lake City, UT	
April 8	San Diego, CA	
May 6	Jersey City, NJ	
June 10	Minneapolis, MN	
July 8	Boston, MA	
August 5	Nashville, TN	
September 9	Las Vegas, NV	
October 14	Atlanta, GA	
November 11	Portland, OR	
December 2	Denver, CO	

The Fear Free Symposia are sponsored by



To register and learn more, visit fearfreepets.com

A spatula is a dull blade with a rounded edge. This may be a safer option, especially around sensitive areas like the eyes.

Trichography

Trichograms can be collected for several different reasons. They can be useful to determine the stage of growth of the hair, melanin clumping in the hair shaft (i.e. color dilute alopecia), barbered hairs, arthrospores on the outside of hair shafts in cases of dermatophytosis, *Demodex* mites and other skin conditions.⁴ To perform a trichogram, pluck approximately 30-40 hairs with clean hemostats or you can even pluck using your fingers from lesional areas and place them in a few drops of mineral oil on a glass slide (Figure 6).⁴ Try to place all hairs in the same orientation on the slide for easier viewing under the microscope and place a cover slip over the hairs.

Skin Biopsies

Punch skin biopsies are routinely performed to obtain a diagnosis. Areas of the skin that are to be biopsied for histopathology should not be clipped or scrubbed! Most of the information the dermatohistopathologist needs to determine a diagnosis may be mechanically removed by doing so (i.e. crusts, scale).² Instead of clipping the hair, it may be gently cut with scissors if necessary. The samples should be submitted in 10% buffered formalin with a 1:10 tissue/formalin ratio.¹

Culturing the Skin

Cultures of the skin may be indicated for cases where there is a non-resolving infection, deep infections, or based on cytological findings. To culture the skin, wear gloves and take care not to touch any portion of the culturette, except the handle. If possible, samples should be taken from primary lesions such as pustules and avoiding chronic areas that are ulcerated.⁷ Swab the area of interest several times with the culturette. If more than one area is affected, swab several areas as well. If the lesions are dry, a few drops from a bottle of

sterile saline may be used by drawing up the saline with a tuberculin syringe with a needle attached and placing drops on the swab of the culture right before taking the sample.

Dermatophyte Test Media (DTM)

Sample collection should occur from the periphery of lesions; that is where the active infection occurs. Collection can be acquired with clean hemostats by plucking hairs and collecting crusts and scale. The method of using a toothbrush for sample collection is called the Mackenzie collection technique. This is accomplished by brushing the animal for a couple minutes and is beneficial for asymptomatic carriers or on subsequent rechecks. The tape method may also be employed and is previously described and then the tape is pressed onto the surface of the fungal media.⁵ When collection is done with hemostats, place the hairs directly onto the medium. They should be in direct contact with the agar, but care must be taken not to drive them into the agar since dermatophytes are aerobic. The Mackenzie collection technique is brushing the animal with a new toothbrush (these can be easily ordered in bulk online and are individually wrapped inexpensive). The bristles of the brush are then tapped onto the medium. DTMs should be kept for at least three weeks, although growth will usually occur sooner. Light does not seem to affect the growth of dermatophytes and cultures should be incubated at 25-30°C.⁶ DTMs should be observed daily for any growth and color change of the agar whenever possible. Any growth, regardless of agar color change,

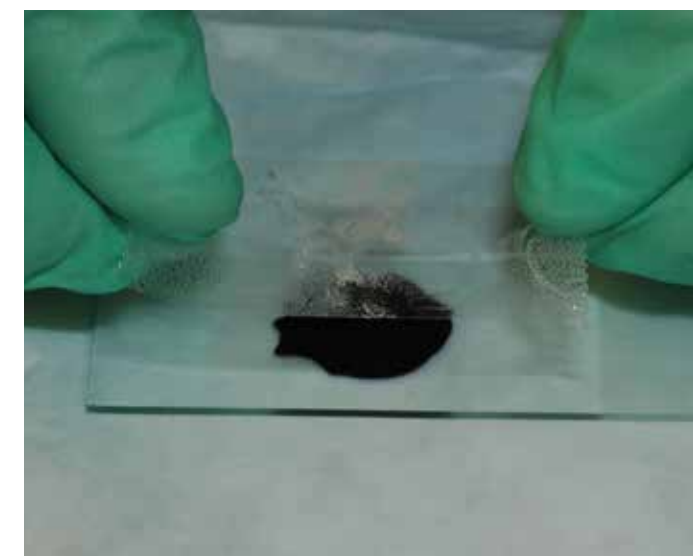


Figure 7 (top): Tape cytology for fungal cultures

Figure 8 (bottom): Slide preparation for fungal cultures

should be viewed under the microscope for identification. The tape method can be used to view macroconidia, microconidia and hyphae from the fungal cultures. Place a drop of lactophenol cotton blue, or PMS fungal tzanck stain (Delasco Labs, Council Bluffs, IA) onto a glass slide. Wearing gloves, press a piece of acetate tape onto the colony and place that onto the slide over the stain (Figures 7, 8). Press down and squeegee out any excess of stain.

Wood's Lamp

A Wood's lamp is a distinct light with magnification that will cause an apple-

green fluorescence to hairs that are infected with *Microsporum canis*. To use the lamp, allow it to warm up for approximately 5-10 minutes to reach the correct wavelength.^{1,2} In a dark room, aim the lamp at the base of hair shafts. It may take 3-5 minutes for fluorescence to occur, so waving it over the animal in a cursory manner will not be beneficial.¹ If hairs fluoresce, these are the hairs that should be plucked for the DTM. Not all dermatophytes will fluoresce using this method, for example, *Microsporum gypseum* and *Trichophyton mentagrophytes* should be taken into consideration when using a Wood's lamp.^{2,5}

Fine Needle Aspirates

Fine needle aspirates (FNAs) are used for nodular lesions. There are two different methods to performing FNAs; the fenestration technique or the aspiration method. The fenestration technique uses a needle only, usually a 22 gauge. Nodules may be cleansed with 70% alcohol and air-dried prior to the procedure. Stabilize the nodule with your fingers and insert the needle into the center of the nodule numerous times. Redirect the needle without removing it and make sure not to cover the hub of the needle while performing this technique. After removing the needle, attach the needle to a 6cc syringe that has the plunger pulled back all the way prior to attaching the needle. With the bevel of

the needle facing downward, blow out the contents from the needle onto the glass slide by pressing the plunger quickly. Repeat by taking off the needle, pull the plunger back on the syringe, reattach the needle and blow out the contents again. Take another slide and place it on top of the sample to smear the contents.

The aspiration method works the same way, but the syringe is attached to the needle while sampling and negative pressure is applied by pulling back on the plunger. Before removing the needle from the tissue, make sure to release the pressure on the syringe before removal. Detach the needle from the syringe, pull the plunger all the way back, reapply the needle and prepare the slide as previously mentioned. The samples should be air-dried. If staining in-house, the fixative of the Diff-Quik® and the two stains may be used, and the sample air-dried. It is best to get multiple samples and save unstained slides to submit to a clinical pathologist if necessary to allow them to use their preferred staining method.

Flea Comb

A Flea comb is obviously useful to comb through an animal's coat to find fleas, but it can also be used to collect flea dirt (ingested and excreted blood). Comb the animal, focusing on the caudal dorsal area and place the collected material on a piece of white gauze. Wet the gauze slightly



Figure 9: Wet gauze test for flea dirt

with tap water and rub. Take note of any reddish-brown color on the gauze, which is suggestive of the presence of fleas (Figure 9). *Cheyletiella* spp., lice, and other large parasites may be collected using a flea comb as well and observed with a magnifying lens or transferring material to a glass slide, with mineral oil and a cover slip.⁷

Fecal Flotation

While fecal floatation's are not routinely performed in a dermatology specialty clinic, they are in general practices. Some of the parasites that may be detected on the prepared slide from an over-grooming animal ingesting the parasites are: *Demodex* spp., fleas, lice and *Cheyletiella* spp.⁷

Sample collection and evaluation is a significant part of any dermatology examination and its importance should not be underestimated.

Summary

Sample collection and evaluation is a significant part of any dermatology examination and its importance should not be underestimated. Understanding the different method options of diagnostics available and when and where to use them will facilitate the examination and provide the necessary information to the clinician for a proper treatment plan for the patient. **J**

REFERENCES

1. Miller WH, Griffin CE, Campbell KL, eds. Diagnostic Methods. In: Muller & Kirk's *Small Animal Dermatology*. 7th ed. St. Louis: Elsevier; 2013: 57-107.
2. Hnilica KA, Patterson AP, eds. Diagnostic Techniques. In: *Small Animal Dermatology: A Color Atlas and Therapeutic Guide*. 4th ed. St. Louis: Elsevier; 30-44.
3. Pereira AV, Pereira SA, Gremiao IDF, Campos MP, Ferreira, AMR. Comparison of acetate tape impression with squeezing versus skin scraping for the diagnosis of canine demodicosis.
4. Voie, K. Trichograms. *Clinician's Brief*. 2017;06: 18-20.
5. Moriello KA, Coyner K, Paterson S, Mignon, B. Diagnosis and treatment of dermatophytosis in dogs and cats. Clinical consensus guidelines of the world association for veterinary dermatology. *Veterinary Dermatology, An International Journal*. 2017;28(3) 266-303.
6. Verbrugge M, Kettings R, Moriello K. 2008. Effects of light and temperature variations on time to growth of dermatophytes using commercial fungal culture media [abstract]. *Veterinary Dermatology* 19:110.
7. Neuber A, Nuttall, T. eds. *Looking for Parasites*. In: *Diagnostic Techniques in Veterinary Dermatology*. Hoboken: Wiley; 21-40.

SANDRA GRABLE, AAS, CVT, VTS

Sandra Grable, AAS, CVT, VTS (Dermatology) Charter Member, graduated in 1999 from Parkland College's Veterinary Technology program in Champaign, Illinois and began work at the University of Illinois Veterinary Diagnostic Laboratory. In 2001 she joined the dermatology and otology service at the University of Illinois Veterinary Teaching Hospital. Her interests include skin cytology, mycology, and assisting with video otoscopy procedures. She has written a book chapter on dermatophytosis for technicians, given several lectures, chaired roundtable discussions at the North American Veterinary Dermatology Forum and written journal articles. She is one of eight charter members of the Academy of Dermatology Veterinary Technicians (ADVTT), which was officially recognized by the National Association of Veterinary Technicians in America in 2015.

Sandy is an Air Force veteran and in her spare time likes to compete in autocross and go RV'ing with her family and two English mastiffs.

LET'S REVIEW...

1. Which lesion should be left untouched for possible biopsy if only one or few are present?
 - a. Epidermal collarette
 - b. Scale
 - c. Comedone
 - d. Pustule
2. When sampling an intact pustule for cytologic evaluation, this method is sometimes referred to as what?
 - a. Tzanck preparation
 - b. Trichogram
 - c. Swab cytology
 - d. Stick cytology
3. Tape cytology from the skin should be stained by using:
 - a. The fixative and two stains of the Diff-Quik®
 - b. The fixative and stain #3 of the Diff-Quik®
 - c. Only stains #2 and #3 should be used of the Diff-Quik®
 - d. Lactophenol Cotton Blue (LPCB) Stain
4. Which dermatophyte(s) will NOT fluoresce under Wood's Lamp examination?
 - a. *M. gypseum*
 - b. *M. canis*
 - c. *T. mentagrophytes*
 - a. Both A and C
5. What other sample collection technique can be used besides deep skin scraping for Demodex mites?
 - a. Stick cytology
 - b. Tape cytology
 - c. Swab cytology
 - d. Fine needle aspirate



Visit VetMedTeam.com and log in with your Vet Med Team Profile.

Virox® and NAVTA want veterinary technicians to understand why **CHOOSING, UNDERSTANDING, and USING DISINFECTANTS** is so important

Check out a brand new 3-part online course available on a new online education portal!

Albert Lea, MN, February 6, 2018 – The National Association of Veterinary Technicians (NAVTA) and Virox® Animal Health have joined forces to provide the veterinary technician community with more opportunities to gain a fresh perspective on tasks that are performed numerous times daily in the practice without a second thought—cleaning, disinfecting, and infection prevention.

Together, NAVTA and Virox® have launched a 3-part online course titled “If You Only Knew...”, available on the new online education portal, www.ViroxLearning.com. This course will look at how the disinfectants used at a veterinary clinic can impact its patients in ways that might not always be so apparent. The first module will touch upon the effect of a cleaning product’s scent on the patient’s experience (spoiler alert: strong smells can be scary!). Modules 2 and 3 of the course help veterinary technicians to best navigate the disinfectant landscape and learn how to implement a disinfection strategy tailored to their practice’s needs.

Each of the 3 modules is approximately 10 minutes in duration. Technicians completing the course will walk away feeling engaged and empowered to take on the critical role of disinfectant decision maker. This is a vital role that will go a long way to help keep their clinic and its patients happy and healthy!



Learn more about how to wipe away the fear (and the mess!) with Virox® and check out the course today at www.ViroxLearning.com.

About NAVTA

The National Association of Veterinary Technicians in America is a nonprofit organization that represents and promotes the profession of veterinary technology. NAVTA provides direction, education, support and coordination for its members. Incorporated in 1981, NAVTA is the national organization devoted exclusively to developing and enhancing the profession of veterinary technology. For more information about NAVTA, visit their website at www.navta.net.



About Virox®

Virox® Animal Health is a leader in disinfectant technology and is dedicated to providing veterinary clinics with disinfectants engineered not only to protect the health of animals and humans, but the planet as well. Virox® strives to make their products Deliberately Different™ through their strength to kill tough pathogens while remaining gentle on the veterinary team, their patients, the equipment they use, and the environment. Virox® Animal Health is also a proud sponsor of Fear Free. To learn more about Virox® Animal Health visit www.viroxanimalhealth.com.



Veterinary Support Staff *Unleashed*

Hosted by Jade Velasquez, LVT, Founder, Veterinary Support Network

Recently, I had the opportunity to attend the VMX conference (formerly NAVC) in Orlando, Florida. The collegiality, sense of purpose and ability to learn amongst like minded people was invigorating. We all love our profession, but at times our jobs become routine. We forget that there is an entire world of learning outside of our own veterinary hospital. The impact of veterinary medicine is profound, and the amazing reach it has reminds many of us why we got into the profession: to gain knowledge to provide the best care for our patients. I asked the VSSU community:

What do you enjoy best about attending conferences?



It gets me excited to go back to work. It rejuvenates my spirit.”

—Valerie Bowman, Receptionist



I love being surrounded by people interested and motivated by progressing this wonderful field.”

—Shawnese Kramer, LVT



It’s a chance for me to network with like-minded people, plus I am able to stay up-to-date on the latest info, the latest equipment, talk directly with reps, attend association meetings and still get rewarded with free stuff! The fact that I can get all my CE in one fell swoop doesn’t hurt, either.”

—Holly Keesling, RVT



Conferences always ignite me! They renew my love for veterinary medicine and inspire me to be the best I can be!! I’m surrounded by my tribe, the people that understand not only my love for vet med but also my desire to improve upon our profession.”

—Wendi Jureski, Practice Manager



I feel refreshed when I go to a conference! I love learning and it makes me remember why I got into the field.”

—Chris Wickes, LVT

By being able to further our education, network and be amongst those whose passion matches our own, many of us leave these conferences remembering we make a difference. That every single person in this field makes a difference in the lives of our patients and clients. Through education we can continue to learn, push boundaries and evolve to be the best at what we do.



300 MILLION REASONS

...to use Rescue™ Disinfectants.

An animal's sensitivity to harsh chemicals is 10,000x greater than ours. That's why Rescue™ has been formulated to be odor-free as well as gentle on users, equipment and the planet — but powerful enough to **kill Parvovirus in as little as 1 minute.**



Together, NAVTA and Virox have launched a FREE 3-part online course titled, "IF YOU ONLY KNEW..." available on the new online education portal, ViroxLearning.com



Available in Multiple Formats & Sizes
RescueDisinfectants.com



Diagnosing ADVERSE FOOD REACTIONS

Carol George, CVT, VTS (Dermatology)

LEARNING OBJECTIVE:

After reading this article, readers should gain a better understanding of the difference between the terms adverse food reaction (AFR), food allergy or hypersensitivity, and food intolerance. They should gain insight as to why these sensitizations possibly occur. They should learn how to diagnose AFRs using the animal's history and clinical signs and how to do a proper diet trial and challenge to determine if they truly have a food allergy. Overall, readers will learn the importance of educating clients to understand the importance of doing a diet trial in order to get better owner compliance.

This program was reviewed and approved by the AAVSB RACE program for 1 hour of continuing education in jurisdictions which recognize AAVSB RACE approval. Please contact the AAVSB RACE program if you have any comments/concerns regarding this program's validity or relevancy to the veterinary profession.

Understanding AFRs

AFRs can encompass food allergy and food intolerance. The clinical signs between them are hard to distinguish and often confusing, making it hard to achieve an exact diagnosis. They can both cause non-seasonal pruritus or gastrointestinal signs. Most commonly, a cutaneous adverse food reaction is seen, but gastrointestinal signs may also be seen with or without co-existing dermatologic signs. Food allergy involves an immunological mechanism causing a true hypersensitivity reaction to the substance.¹ The most common of these mechanisms are type I, III, and IV hypersensitivity reactions, with type I being the most commonly researched in humans and animals.² Type I reaction can be associated with an immediate (minutes to hours) or a delayed (within several hours to days) reaction.^{1,2} Food intolerance, which is specific to the individual, is a reaction and may be based on metabolic or pharmacologic mechanisms.^{1,2,3} These mechanisms can be associated with enzyme deficiencies, abnormal absorption or naturally occurring chemicals in food.⁴ It is also possible for bacterial toxins or histamine in food, which can be dose related, to cause toxic reactions and be confused with hypersensitivity.^{1,2,3}

Cause and Pathogenesis

It is not well known or completely clear the reason why the skin is often targeted by a food-induced hypersensitivity or if the sensitization happens in the intestinal mucosa or to the absorbed allergen. There are many mechanisms that make up the intestinal mucosal barrier in the gut that block foreign antigens from being absorbed into the body.¹ Normally, the gastric acid enzymes, pancreatic and intestinal enzymes in the gut lumen, and the intestinal cell lysosomal activity break down the antigens. Also, potential antigens are trapped in the intestinal mucous, blocking their absorption and then removed by intestinal peristalsis.¹ An oral tolerance is induced due to the normal immune response to dietary proteins. The failure to develop this oral tolerance or



a compromised or damaged gastrointestinal barrier, may result in the development of food hypersensitivity.² Because food hypersensitivity to small proteins and amino acids is rare, poor digestion can cause larger protein molecules to develop, possibly causing a hypersensitivity reaction.² When there is chronic ingestion of offending food allergens, cutaneous reactions are thought to be caused by a mechanism that releases histamine, even in the absence of the offending antigen, which can then continue for a period of time after the antigen is removed. This could explain why there is such a time delay (10-13 weeks) from when the hypo-allergenic diet is started to the clinical improvement seen in some food hypersensitive dogs.² There is not a lot known about what food allergens are important in small animals compared to in humans. It is known that the allergen is mostly a water-soluble glycoprotein found in the food and may become recognized only after the food is prepared, heated or digested.²

Diagnosing Food Allergies

Obtaining a history, developing a differential list, and looking at the clinical signs are important factors in deciding if we need to rule out food allergy.

History

The first thing we need to do is to obtain a good history from the client. The important factors for consideration are the age of the onset of pruritus, if there is seasonality or not, previous treatments and response to treatments of infections and parasites. Finally, a complete diet history is needed, including ingredients from all diets ever fed, all treats, chewable medications, vitamins, and any flavored toys.

Differentials

Next a differential list should be formed. This list of differentials to diagnose canine and feline adverse food reactions is in Table 1.²

Clinical disease in the dog

Food allergy or hypersensitivity is a clinical disease usually causing a non-seasonal pruritic dermatosis. It is thought to occur in about 10-20% of dogs with atopy. In one study done at a referral clinic, 7.6% of all dogs presented to the clinic over one year presented with food allergy. 32.7% of the dogs presented were diagnosed with concurrent skin disease.⁵ Another study reported that 40-52% of non-seasonal pruritic dogs had AFR.⁶ It is possible that we miss cases because of how difficult it is to identify food allergy and because it is often associated with atopic disease.

We often see either young dogs, less than 6 months of age, or older dogs, over 6-7 years of age, with food hypersensitivity. Although there is no specific age documented, studies show that 33-52% of food hypersensitive dogs had clinical signs at 1 year or less.^{7,8} When pruritus occurs under 6 months or greater than 7 years, with no previous history, food becomes much more suspicious.

There are no specific breeds in either the dog or cat that are considered to be predisposed to AFR. Some dog breeds predisposed to atopy are thought to be at a higher risk for AFR because the diseases often go hand in hand with each other (Sidebar 1).²

Many different clinical signs may be seen with AFR in addition to non-seasonal pruritus. There have been dogs with only recurrent folliculitis but no pruritus seen. In the pruritic dogs, the degree of pruritus can vary and at times be severe. The response to corticosteroids varies. Some dogs will not respond to them at all, but since this is not always true, it is important to still consider food allergy when there is a response to steroids. Also, clinical signs may be intermittent if the owners are feeding the allergenic food sporadically, therefore food allergy should still be considered. There are a variety of primary and secondary lesions that occur (Tables 2 and 3).² The most common areas to be affected are ears, rump, perianal area, distal limbs, axillae and groin (Figures 1A and B, 2A and B).² There have

TABLE 1: List of Differentials to diagnose AFRs

Canine	Feline
Atopic Dermatitis	Atopic Dermatitis
Drug Reactions	Fleabite Hypersensitivity
Contact Allergy	Dermatophytosis
Flea Bite Hypersensitivity	Otodetic Mange
Scabies	Cheyletiellosis
Malassezia Dermatitis	Notoedric Mange
Seborrheic Skin Disease	Psychogenic Alopecia
Bacterial Folliculitis	Psychogenic Dermatitis

TABLE 2. Primary Lesions of AFR dogs

Erythematous wheals
Papules
Macules
Plaques

TABLE 3. Secondary Lesions of AFR dogs

Excoriations
Ulcerations
Alopecia
Lichenification
Hyperpigmentation
Crusts
Bacterial infections
Malassezia infections
Seborrhea
Acral lick granulomas
Pyotraumatic dermatitis
Pododermatitis

been some instances where only the ears are affected with otitis. Often, dogs will develop a recurrent bacterial and/or yeast otitis.

Other secondary lesions and signs due to the pruritus and self-trauma are shown in Table 2 (Figures 3A, B, and C).² Gastrointestinal problems have been reported in about 10-15% of AFR dogs and cats (Table 4).⁹ A study of food allergic dogs, with both skin and gastrointestinal signs, resulted in 60% of them defecating six or more times a day.¹⁰

Clinical Disease in the Cat

In cats, non-seasonal pruritus is also the most common dermatologic sign and can be severe, often affecting the face, ears and neck but sometimes can be generalized. The average age has been reported by some to be between 4-5 years of age, but others have had about half of their cases develop AFR around 2 years of age.² The primary signs seen in the cat are in Table 5.² There have been some cases that alopecia was the only symptom, which is easily misdiagnosed as psychogenic. In a review that was done, 57% of psychogenic alopecic cats were found to be AFRs.¹¹ Secondary infections may occur but not as common as in the dog. Similar to the dog, cats can also have vomiting and diarrhea along with skin disease. There was a prospective study done of confirmed food allergic cats using diet trials. 16% out of 61 were pruritic and 42% out of 12 were pruritic along with vomiting or diarrhea.¹² Also, in cats with chronic GI sensitivity, 29% out of 70 cats were diagnosed with food hypersensitivity.¹³

Diagnosis

Since food allergy can co-exist with other allergies, and have similar signs, it is possible for us to miss the diagnosis. Therefore, the "gold standard" for the diagnosis of an AFR, and the **only way** to rule out food allergy, is to do a good elimination diet trial and if possible, to challenge the diet with the previous food and treats. There are many food allergies that go undiagnosed due to clients not completing an adequate elimination diet. It has been reported in

SIDEBAR 1: DOG BREEDS PREDISPOSED TO ATOPY AND SUSPECT FOR AFR

- American Cocker Spaniels
- Boxers
- Chinese Shar-Peis
- Collies
- Dachshunds
- Dalmatians
- English Springer Spaniels
- German Shepherds
- Golden Retrievers
- Labrador Retrievers
- Miniature Schnauzers
- Poodles
- West Highland White Terriers
- Wheaten Terriers

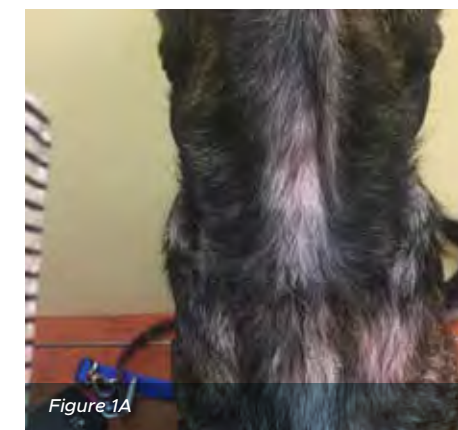


Figure 1A



Figure 1B

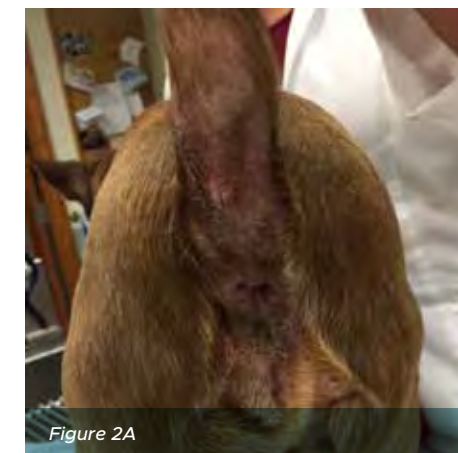


Figure 2A

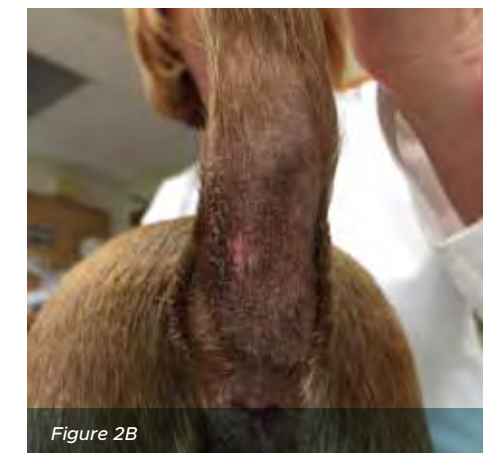


Figure 2B

The most common areas to be affected by AFR are ears, rump, perianal area, distal limbs, axillae and groin.

TABLE 4. Gastrointestinal problems secondary to AFR in dogs and cats

Vomiting	Diarrhea
Flatulence	Increased bowel movements
Blood and mucous in the stool	Tenesmus

20% to 30% and as high as 75% of these cases are missed.² It's conceivable that the food allergy ends up being the flare factor of many combination allergic animals.^{1,2} Many owners believe that their dog cannot be food allergic because they have been on the same food for years and if there is an allergy, it is to a grain or preservative in the commercial food they are feeding. Most often, that is not the case and a protein or, occasionally, a carbohydrate is the offending antigen and the food has often been fed for at least 2 years before clinical signs may be seen.² A hypoallergenic diet

trial should be done for at least 8-10 weeks in order to see resolution or maximum improvement of clinical signs. In Dr. Rosser's prospective study only 26% of food hypersensitive dogs would have been diagnosed in a 21-day protocol.⁸ Often a degree of improvement may occur within 4-6 weeks, but it was concluded that 3 weeks would only diagnose 25% of the dogs which is not long enough to diagnose food allergy.⁸ Most clinical signs will be gone in 10 weeks or longer, but pruritus is usually decreased by 6 weeks and, if it isn't, then it most likely won't be.²

A variety of primary and secondary lesions occur when a dog is suffering from AFR, including recurrent bacterial and/or yeast otitis, due to the pruritus and self-trauma.



Figure 3A



Figure 3B



Figure 3C

The Diet Trial

A careful dietary history is important to obtain in order to decide the appropriate diet to use. The objective is to find a diet with a novel protein and carbohydrate never fed before. This has become much more difficult due to the increased commercial over-the-counter diets that include ingredients that are in the veterinary limited diets, and the habit of owners feeding table scraps.¹⁴ It is not recommended to switch from one diet to another during the trial. Common ingredients of a novel protein diet used are in Sidebar 2.² Home-cooked diets, although hard for many to choose for their diet trial, are often the most successful in diagnosing food allergy. The homemade diet usually consists of one protein and one carbohydrate. Another alternative is to use frozen or fresh vegetables and one carbohydrate. Because home-cooked diets are not processed and are free of additives, they are purer. It is important to have the diet be balanced and have adequate mineral supplementation, especially for young, fast growing dogs, if they are maintained for any length of time on the diet. If using vegetables, it is important to monitor weight loss and the protein level periodically, to make sure they do not go too low.

Another option to use for the diet trial is one of the novel protein diets currently being commercially made. There are several companies making a variety of limited and novel protein diets that are a good alternative because they are nutritionally complete and more convenient to use. There was a study done of limited ingredient diets from multiple companies that found contamination from other food allergens not listed on the ingredient label.² So, it is important to understand that none of the commercial diets are going to be 100% effective and looking at each individual's history and needs will help to find the best diet to use.

Another option for a diet trial is the hydrolyzed diet. The protein in this diet is broken into smaller pieces and made less

allergenic by minimizing the ability to cross link IgE and mast cell degranulation. This may not be the best diet to use in all cases due to the fact that some animals with AFR do not have type I hypersensitivity and therefore it will not work.² There have been many studies looking at the success of the hydrolysate diets in diagnosing AFR.¹⁵ Also, they're determining if molecular weight of the allergen matters in the dog or cat.¹⁶ Rosser's study used a hydrolyzed diet where 98.8% of the proteins were less than 1400 Daltons, in 7 dogs, and when challenged, no symptoms became worse.¹⁷ The percentage of dogs diagnosed with the hydrolysate diets make these diets a good alternative, although, there have been some problems with poor palatability, diarrhea, and reduced nutritional value in some animals.²

When switching over to the new diet, it should be done over a course of about 4 days. The first day 1/4 of the new diet with 3/4 of the old should be fed. Then feed equal amounts for day 2, and then 1/4 old and 3/4 new for the third day. Finally, on day 4, the new diet will be fed by itself. If the patient is sensitive to diet changes, the diet can be switched over a little slower. No matter which diet is chosen for the trial, it is very important to educate the owner regarding the need to never let anything but the actual diet alone cross their dog's lips! No other food, treats, rawhides, pig ears, cow hooves, flavored toys, or chewable medications or vitamins should be given during the diet-trial. Medications should be switched to a non-flavored or topical when possible. Capsules from medications and supplements contain gelatin (parts and pieces of cattle, swine, or horses) and, if possible, they should be switched to a tablet. Ideally if a commercial brand of food is used, picking either dry or canned would be best to limit the amount of processing being used. If needed, the owner could use the actual food ingredients such as mashed potatoes or dehydrated venison to hide medication in or to use for treats. Seasoning cannot be used though. The canned food can be frozen in chunks or baked into

TABLE 5. PRIMARY SIGNS OF AFR IN THE CAT

Eosinophilic granuloma complexes
Miliary dermatitis
Recurrent otitis
Angioedema
Urticaria
Conjunctivitis

biscuits. If there is more than one pet in the home, either feed them the same diet or feed them in separate areas keeping the patient from accessing the bowl of the other pet's food. A basket muzzle is a good option to use for the dogs that like to eat things when they go outside or keeping them on a leash is another option. Keep them away from the cat's litter box and keep the patient out of the kitchen when food is being prepared and during meal time. Even a small amount of food dropped can ruin the diet trial! Owner compliance is the hardest part of the trial and everyone in the family needs to be on board.

It is important to control other allergies, infections and anything that will confuse the interpretation of the diet-trial. Monitoring the pruritus by the owner or watching for the recurrence of infection is very important. If there are any GI signs, they should be noted. The length of the diet trial should be judged by the symptoms that the animal has and if it will be difficult to assess the progress of the diet trial within the normal time frame. For example, if a dog normally develops bacterial folliculitis every 3 months, then the trial will need to be long enough to be able to determine if the infection recurs or not.² Once the clinical signs have either cleared or improved and have not relapsed, it is imperative for the owner to challenge the diet to confirm AFR. Because treatments may be the reason for improvement during the trial, the only way to truly diagnose AFR is to do the challenge with the old



SIDEBAR 2. A Novel Protein Diet: Common Ingredients

- Rabbit
- Venison
- Kangaroo
- Filleted whitefish
- Canned tuna fish in water
- Turkey
- Rice
- Potatoes
- Ostrich
- Yams
- Pinto beans



Top Photo by Shutterstock.com / Oksis168. Bottom Photo by Shutterstock.com / makotomo

food, treats, medications, and anything the owner has given and may want to feed in the future. Normally the dog will relapse within 1-2 days and as long as 7-10 days with their clinical symptoms.² If there is a relapse, the animal should be put back on the test diet used during the trial, and the offending ingredient should be immediately taken away until the signs are gone. Then a new ingredient may be introduced every 14 days to determine what the animal can eat. Also, the challenge should be continued until all ingredients have been challenged because there can be multiple sensitivities. It is recommended to start with individual meat sources that were in the old diet and then carbohydrates. Next introduce all old treats and flavored toys. This process can be very lengthy and take many weeks to months. There have been no good alternative tests found to be diagnostic for identifying AFRs.²

Serology for food allergy has been inconclusive and inconsistent with false positives in normal dogs and in dogs with other skin diseases.² The results are often positive to different allergens than that which have been diagnosed through a food trial.²

It is hard to know what food allergen(s) are most commonly responsible for food

reactions. In past studies it was found that beef was the most reacted to along with soy, chicken, milk, corn, wheat, and eggs.¹⁸ But that has changed, and may continue to change with the variance in the foods that are more commonly fed to our animals. Food additives, including preservatives are rarely documented to cause food hypersensitivity in dogs even though they are often blamed by the public. It does seem, in general, that the most common allergenic foods are those that are most often fed.²

Cats tend to be more difficult than dogs in finding a diet that they will accept so sometimes multiple diets will have to be tried to find one that will work. Outdoor cats would need to stay indoors during the duration of the diet trial. It is also important to communicate with the owner of a finicky eater that a cat cannot go without eating for long due to the risk of developing hepatic lipidosis.² Canned diets may be a good choice for cats due to their palatability and being less exposed to preservatives.²

Clinical Management

The best long-term therapy will be avoiding the allergenic ingredient(s) and controlling the pruritus. Also, it will be important to treat infections as symptoms

recur with topical antiseptics and systemic medications. For maintenance most of the time a commercial balanced diet can be found, especially a limited novel protein or hydrolyzed diet. But there are about 20% of food-hypersensitive dogs and up to a third of cats that need to be maintained on home-cooked diets due to not being able to consume any commercial diet without symptoms.^{1,2,3} Sometimes, although not as common, this may be due to a reaction to a preservative used in the diet. It will be important to balance the diet with unflavored animal and vegetable protein-free vitamins and calcium, mineral, and fatty acid supplements. There is a website that can be used to formulate a balanced homemade diet. It can be found at www.balanceit.com.² When hypoallergenic diets are not possible, systemic corticosteroids, cyclosporine, and /or antihistamines, and other medications used for atopic disease may be used to suppress clinical signs. It is possible, although rare, that an animal may become sensitized to the new diet, and if

needed, further diet manipulation may be necessary in the future. It is a good idea to recheck AFR animals periodically to see that they remain controlled.³

Conclusion

Once food allergy has been diagnosed and the offending allergen has been identified, the prognosis for AFR is good. It is not the most common skin disease but it is not rare. An elimination diet trial should be done when appropriate because that will be the only way to get to the underlying cause to get the best control. The diagnosis and management of AFR in dogs and cats is possible even if skin disease is not understood at that time, as long as the client is willing to commit and be diligent in their quest to find the offending ingredients.³ They will then know what they are dealing with and can work toward finding the best control of their animal's food allergies. **J**

REFERENCES

1. Scott DW, Miller, Jr WH, Griffin CE. Skin Immune System and Allergic Skin Diseases. In: *Small Animal Dermatology*: 6th Ed. Philadelphia, PA: W.B. Saunders Company; 3001:615-627.
2. Miller, Jr. WH, Griffin CE, Campbell KL. Hypersensitivity Disorders. In: *Small Animal Dermatology*: 7th Ed. St. Louis, MO: Elsevier Mosby; 2013:397-405
3. Jasmin P. Adverse Food Reactions (AFR) (Food Allergy & Food Intolerance) In: *Clinical Handbook on Canine Dermatology*: 3rd Ed. Virbac S.A. 2011; part 2; 1-8.
4. Hardy JI, Hendricks A, Loeffler A, et al. Food Specific serum IgE and IgG reactivity in dogs with and without skin disease: Lack of correlation between laboratories. *Vet Dermatol* 25 (5): 447-453 2016 August.
5. Chesney CJ: Food sensitivity in the dog: a quantitative study. *J Small Animal Practice* 43 (5):203-207, 2002 May.
6. Loeffler A, Soares-Magalhaes R, Bond R, et al: A retrospective analysis of case series using the diagnosis of adverse food reactions in 181 pruritic dogs. *Vet Dermatol* 17 (4): 273-279, 2006
7. Harvey RG: Food allergy and dietary intolerance in dogs: A report of 25 cases. *J Small Anim Pract* 33:22, 1993.
8. Rosser EJ Jr: Diagnosis of food allergy in dogs. *J Am Vet Med Assoc* 203(2):259-262, 1993.
9. Merchant SR, Taboada J: Food allergy and immunologic diseases of the gastrointestinal tract. *Semin Vet med Surg* 6:316, 1991.
10. Paterson S: Food Hypersensitivity in 20 dogs with skin and gastrointestinal signs. *J Small Anim Pract* 36(12):529-534, 1995 Dec.
11. Waisglass SE, Landsberg GM, Yager JA, et al: Underlying medical conditions in cats with presumptive psychogenic alopecia. *J Am Vet Med Assoc* 228(11): 1705-1709, 2006
12. Markwell PJ, et al: Prevalence of food sensitivity in cats with chronic pruritus, vomiting or diarrhea. In Kwochka KW, et al, editors: *Advances in Veterinary Dermatology III*, Boston, 1998 Butterworth Heinemann, p 493.
13. Guilford WG, Jones BR, Markwell PJ, et al: Food sensitivity in cats with chronic idiopathic gastrointestinal problems. *J Vet Intern Med* 15(1):7-13, 2001.
14. Bizikova P, Olivry T. A randomized, double-blinded crossover trial testing the benefit of two hydrolyzed poultry-based commercial diets for dogs with spontaneous pruritic chicken allergy. *Vet Dermatol* 27(4): 289-293, 2016 August.
15. Loeffler A, Lloyd DH, Bond R, et al: Dietary Trials with a commercial chicken hydrolysate diet in 63 pruritic dogs. *Vet Rec* 154(17):519-522. 2004.
16. Groh M, Moser E: Diagnosis of food allergy in the non-seasonally symptomatic dog using a novel antigen, low molecular weight diet. A prospective study of 29 cases. *Vet allergy clin Immunol* 6:5 1998.
17. Rosser EJ: Protein hydrolysates in canine diets to diagnose and prevent food allergy. *Monograph, 1000, Allergy Concepts*.
18. Jeffers JG, et al: Responses of dogs with food allergies with single ingredient dietary provocation *J Am Vet Med Assoc* 209: 608, 1996.

CAROL GEORGE, CVT, VTS (DERMATOLOGY)

Carol George, CVT, VTS (Dermatology) Charter Member graduated from Columbus Technical College in 1982. After 4 years in private practice, she began working at The Ohio State University Veterinary Teaching Hospital for over 6 yrs. It was there that her interest in dermatology developed. A move to Minnesota, with her husband Steve, led her to where she has been for the last 22 years working at Veterinary Dermatology Service. She has chaired round table discussions at the North American Veterinary Dermatology Forum and is published in the Derm Dialogue. She is the secretary and one of eight charter members of the Academy of Dermatology Veterinary Technicians (ADVT), which was officially recognized by the National Association of Veterinary Technicians in America in 2015. Carol is a mother of two and has a German shepherd and Maltese poodle mix, along with a rambunctious 1-year-old kitten! In her spare time she loves to sing, travel and camp with family and friends.



LET'S REVIEW...

1. Food hypersensitivity most often causes:

- Intermittent pruritus
- Seasonal pruritus
- Non-seasonal pruritus
- Respiratory symptoms

2. Food allergy is considered:

- To be an immunologic reaction, most commonly a type 1 reaction
- To be a non-immunologic reaction
- To include metabolic mechanisms such as enzyme deficiencies and abnormal absorption of the food
- a and c

3. The most common age for AFR to be diagnosed is in:

- Young dogs, especially 6 months or under
- Dogs age 1-3
- Older dogs over 6-7 years old
- a and c

4. A true statement regarding AFR in dogs is:

- It is less likely to be food allergic if a dog has been on the same diet for many years
- It is more common to react to a grain or a preservative in the food
- AFR does not usually co-exist with atopy
- It is common for a protein in the diet to be the cause of an AFR

5. The length of an elimination diet trial should be how many weeks?

- 3-4 weeks
- 4-6 weeks
- 8-10 weeks
- Always about 12 weeks or more



Visit VetMedTeam.com
and log in with your
Vet Med Team Profile.

Heartgard[®] Plus[®]

(ivermectin/pyrantel)

CHEWABLES

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS: For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae (*Dirofilaria immitis*) for a month (30 days) after infection and for the treatment and control of ascarids (*Toxocara canis*, *Toxascaris leonina*) and hookworms (*Ancylostoma caninum*, *Uncinaria stenocephala*, *Ancylostoma braziliense*).

DOSAGE: HEARTGARD[®] Plus (ivermectin/pyrantel) should be administered orally at monthly intervals at the recommended minimum dose level of 6 mcg of ivermectin per kilogram (2.72 mcg/lb) and 5 mg of pyrantel (as pamoate salt) per kg (2.27 mg/lb) of body weight. The recommended dosing schedule for prevention of canine heartworm disease and for the treatment and control of ascarids and hookworms is as follows:

Dog Weight	Chewables Per Month	Ivermectin Content	Pyrantel Content	Color Coding On Foil Backing and Carton
Up to 25 lb	1	68 mcg	57 mg	Blue
26 to 50 lb	1	136 mcg	114 mg	Green
51 to 100 lb	1	272 mcg	227 mg	Brown

HEARTGARD Plus is recommended for dogs 6 weeks of age and older. For dogs over 100 lb use the appropriate combination of these chewables.

ADMINISTRATION: Remove only one chewable at a time from the foil-backed blister card. Return the card with the remaining chewables to its box to protect the product from light. Because most dogs find HEARTGARD Plus palatable, the product can be offered to the dog by hand. Alternatively, it may be added intact to a small amount of dog food. The chewable should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally swallow treats whole.

Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes after administration to ensure that part of the dose is not lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

HEARTGARD Plus should be given at monthly intervals during the period of the year when mosquitoes (vectors), potentially carrying infective heartworm larvae, are active. The initial dose must be given within a month (30 days) after the dog's first exposure to mosquitoes. The final dose must be given within a month (30 days) after the dog's last exposure to mosquitoes.

When replacing another heartworm preventive product in a heartworm disease preventive program, the first dose of HEARTGARD Plus must be given within a month (30 days) of the last dose of the former medication.

If the interval between doses exceeds a month (30 days), the efficacy of ivermectin can be reduced. Therefore, for optimal performance, the chewable must be given once a month on or about the same day of the month. If treatment is delayed, whether by a few days or many, immediate treatment with HEARTGARD Plus and resumption of the recommended dosing regimen will minimize the opportunity for the development of adult heartworms.

Monthly treatment with HEARTGARD Plus also provides effective treatment and control of ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*). Clients should be advised of measures to be taken to prevent reinfection with intestinal parasites.

EFFICACY: HEARTGARD Plus Chewables, given orally using the recommended dose and regimen, are effective against the tissue larval stage of *D. immitis* for a month (30 days) after infection and, as a result, prevent the development of the adult stage. HEARTGARD Plus Chewables are also effective against canine ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*).

ACCEPTABILITY: In acceptability and field trials, HEARTGARD Plus was shown to be an acceptable oral dosage form that was consumed at first offering by the majority of dogs.

PRECAUTIONS: All dogs should be tested for existing heartworm infection before starting treatment with HEARTGARD Plus which is not effective against adult *D. immitis*. Infected dogs must be treated to remove adult heartworms and microfilariae before initiating a program with HEARTGARD Plus.

While some microfilariae may be killed by the ivermectin in HEARTGARD Plus at the recommended dose level, HEARTGARD Plus is not effective for microfilariae clearance. A mild hypersensitivity-type reaction, presumably due to dead or dying microfilariae and particularly involving a transient diarrhea, has been observed in clinical trials with ivermectin alone after treatment of some dogs that have circulating microfilariae.

Keep this and all drugs out of the reach of children.

In case of ingestion by humans, clients should be advised to contact a physician immediately. Physicians may contact a Poison Control Center for advice concerning cases of ingestion by humans.

Store between 68°F - 77°F (20°C - 25°C). Excursions between 59°F - 86°F (15°C - 30°C) are permitted. Protect product from light.

ADVERSE REACTIONS: In clinical field trials with HEARTGARD Plus, vomiting or diarrhea within 24 hours of dosing was rarely observed (1.1% of administered doses). The following adverse reactions have been reported following the use of HEARTGARD: Depression/lethargy, vomiting, anorexia, diarrhea, mydriasis, ataxia, staggering, convulsions and hypersalivation.

SAFETY: HEARTGARD Plus has been shown to be bioequivalent to HEARTGARD, with respect to the bioavailability of ivermectin. The dose regimens of HEARTGARD Plus and HEARTGARD are the same with regard to ivermectin (6 mcg/kg). Studies with ivermectin indicate that certain dogs of the Collie breed are more sensitive to the effects of ivermectin administered at elevated dose levels (more than 16 times the target use level) than dogs of other breeds. At elevated doses, sensitive dogs showed adverse reactions which included mydriasis, depression, ataxia, tremors, drooling, paresis, recumbency, excitability, stupor, coma and death. HEARTGARD Plus demonstrated no signs of toxicity at 10 times the recommended dose (60 mcg/kg) in sensitive Collies. Results of these trials and bioequivalency studies, support the safety of HEARTGARD products in dogs, including Collies, when used as recommended.

HEARTGARD Plus has shown a wide margin of safety at the recommended dose level in dogs, including pregnant or breeding bitches, stud dogs and puppies aged 6 or more weeks. In clinical trials, many commonly used flea collars, dips, shampoos, anthelmintics, antibiotics, vaccines and steroid preparations have been administered with HEARTGARD Plus in a heartworm disease prevention program.

In one trial, where some pups had parvovirus, there was a marginal reduction in efficacy against intestinal nematodes, possibly due to a change in intestinal transit time.

HOW SUPPLIED: HEARTGARD Plus is available in three dosage strengths (see DOSAGE section) for dogs of different weights. Each strength comes in convenient cartons of 6 and 12 chewables.

For customer service, please contact Merial at 1-888-637-4251.



©HEARTGARD and the Dog & Hand logo are registered trademarks of Merial.
©2015 Merial, Inc., Duluth, GA. All rights reserved. HGD16TRADEAD (01/18).

TRUST.

- ✓ PREVENTS HEARTWORM DISEASE
- ✓ TREATS AND CONTROLS 3 SPECIES OF HOOKWORMS
- ✓ TREATS AND CONTROLS 2 SPECIES OF ROUNDWORMS
- ✓ OWNERS PREFER IT¹ AND DOGS LOVE IT²



¹ Data on file at Merial.

² Freedom of Information: NADA140-971 (January 15, 1993).

HEARTGARD Plus is a Merial product. Merial is now part of Boehringer Ingelheim.



©HEARTGARD and the Dog & Hand logo are registered trademarks of Merial. ©2018 Merial, Inc., Duluth, GA. All rights reserved. HGD16TRADEAD (01/18).

IMPORTANT SAFETY INFORMATION: HEARTGARD[®] Plus (ivermectin/pyrantel) is well tolerated. All dogs should be tested for heartworm infection before starting a preventive program. Following the use of HEARTGARD Plus, digestive and neurological side effects have rarely been reported. For more information, please visit www.HEARTGARD.com.

Heartgard[®] Plus[®]
(ivermectin/pyrantel)



NAVTA
JOURNAL

1931 N. Meacham Road
Schaumburg, IL 60173