Michael Lappin: Good evening everyone and thank you for joining our AAFP Rounds session on Diagnosis, Treatment, and Prevention of Bartonella spp. Infections.

I was proud to work on the recently published AAFP Panel report on the subject with panelists: Jane Brunt, DVM (Cat Hospital At Towson, Baltimore, MD), Lynn Guptill, DVM, PhD, Diplomate ACVIM (Purdue University - School of Veterinary Medicine), Dorsey L. Kordick, PhD (Idexx Pharmaceuticals, Greensboro, NC 27410), and Sandra Kudrak, DVM, Diplomate ABVP (Community Animal Hospital, Poughkeepsie, NY).

Our external reviewers included Drs. M Arvand, RJ Birtles, HJ Boulouis, H Carney (AAFP Fellow), BB Chomel, EB Breitschwerdt, CE Greene, A Johns (AAFP Fellow), LK Jarboe (AAFP Fellow), J Koehler, BA Nanton (AAFP Fellow), RL Regnery, and SE Shaw.


Tonight I will be using many statements directly from the Panel Report. If you are not an AAFP member yet, we would love you to join! You will get a subscription to the Journal of Feline Medicine and Surgery and it is a great group to interact with! Please check out our website: http://www.aafponline.org. For those of you that are not AAFP members and do not otherwise subscribe to JFMS, we should have the complete Panel Report on our website within the next month or so.

Our AAFP Panel chose to write the report using a question and answer format. We tried to develop consensus on 32 Bartonella associated questions. Tonight, I have chosen to focus on several of the most commonly asked questions. I look forward to our discussion and seek your interaction and input. Let’s begin with the first question.

POLL 1 ... Please choose one of the following that most closely estimates the numbers of cats in your practice that are likely to have been exposed to fleas.

Results:
4 (15%): A. < 10%
3 (11%): B. 11-20%
9 (33%): C. 21-50%
5 (19%): D. 51-75%
6 (22%): E. > 75%

Michael Lappin: Ok, it looks like a pretty even split. In Colorado, we get excited and get on the overhead speaker to come to exam room 12 to see the flea!

One commonly asked question is ‘What Bartonella spp. infect cats?’ Bartonella spp. are gram-negative, hemotropic, bacterial organisms that infect people and a number of domestic and wild mammals. Cats are known to be infected by:

**Bartonella henselae**
**B. clarridgeiae**
**B. koehlerae**
**B. quintana**
**B. bovis**

Cats are thought to be the main reservoir hosts for B. henselae and B. clarridgeiae and probably are the reservoir for B. koehlerae. The large majority of people with CSD (cat scratch disease), bacillary peliosis, or bacillary angiomatosis have been infected by B. henselae or B. quintana. Bartonella koehlerae DNA was recently amplified from the blood of a person with endocarditis. Bartonella quintana infection is the cause of trench fever, endocarditis, bacillary angiomatosis and other clinical conditions. However, B. quintana is transmitted to people by lice; cats are not thought to be an important factor in transmission to people.

Ok, BH and BC are our major players in the cat world. Let’s take a second poll. POLL 2 ... Which of the following is average prevalence rate of Bartonella spp. bacteremia in cats from studies around the world.

Results:
9 (30%): A. < 10%
8 (27%): B. 20%
6 (20%): C. 40%
2 (7%): D. 60%
5 (17%): E. > 60%

Michael Lappin: Great responses! And all are probably right, depending on where you live. Bartonella spp. infections of cats have been documented by culture or amplification of DNA by PCR assay in multiple countries within Europe, Asia, Oceania, and the Americas; an extensive review is available.


Prevalence rates vary dramatically, but bacteremia is commonly detected in greater than 20% of cats tested. For example, in cats between 3 months and 2 years of age residing in Florida, 33% were culture positive for a Bartonella spp. in blood at the time of sampling. Depending on the population tested, serological evidence of exposure can be extremely common; 93% of feral cats in North Carolina, USA had antibodies against Bartonella spp. In general, the seroprevalence rate by study is generally about twice the rate of bacteremia in the same population. For example, in one study of 271 cats, 65 (24%) cats had B. henselae bacteremia and 138 (51%) cats were seropositive for B. henselae antibodies. In the United States, increased risk for seropositivity parallels increasing warmth and precipitation, which are also factors important for increased exposure to potential arthropod vectors. With 100 million pet cats in the USA, that is a lot of cats with bugs in their blood! We will discuss cat scratch disease and sick cats in a little while.

Another common question is ‘What cats are most likely to have Bartonella spp. infections?’ In most surveys, likelihood of B. henselae or B. clarridgeiae bacteremia of cats is greatest in young cats and cats infested with fleas. Other risk factors include being allowed outdoors or being otherwise associated with multiple cats. Bartonella henselae mainly infects erythrocytes and endothelial cells but can also be found in a variety of tissues and in some cases has been documented.
extracellularly. In experimental studies, cats have successfully been infected with Bartonella spp. by intradermal, subcutaneous, intramuscular, intravenous, and oral inoculation of blood derived from infected cats or plate grown bacteria. Transmission also occurs by intradermal injection of infected flea feces.

Bartonella henselae is ingested by fleas while they are ingesting cat blood, the infection is amplified in the flea hindgut, and live B. henselae is present in flea feces for at least 9 days. However, fleas do not appear to transmit B. henselae infection to cats via biting. Based on these results and those of epidemiological studies linking Bartonella spp. infection or exposure to cats allowed outdoors or exposed to fleas, it was the consensus opinion of the Panel that exposure to fleas or flea feces is the most important consideration for transmission of Bartonella spp. between cats.

In a recent study from my laboratory of fleas collected from 92 client-owned cats residing in Alabama, Maryland, or Texas in the USA, the prevalence rates for B. henselae and B. clarridgeiae DNA were 22.8% and 19.6%, respectively. The following is the full citing:


Michael Lappin: Are there any questions at this time?

Chick Newman: How do fleas transmit to cats if not by bites?

Michael Lappin: Cats are probably contaminating their claws and perhaps mouths with flea dirt during grooming and sharing that way. Also, ingesting the fleas and flea dirt may be infectious. Definitely the fighting cats are sharing BH andd hemoplasmas by sharing blood. When you add Rickettsia felis and hemoplasma prevalence into what is in fleas, we are up to about 80% pathogen carriage. Fleas are nasty dirty creatures!

Robert Michaud: Does seropositivity mean disease?

Michael Lappin: Yes, we amplified DNA of a Bartonella, hemoplasma or Rickettsia felis, alone or in combination from about 80%.

Neil Tenzer: What was R. felis previous name & disease?

Michael Lappin: It has be R. felis from the start... not sure if it is a good pathogen in cats. We have failed to link it to fever or uveitis so far... stay tuned for more work presented at ACVIM.

Let's take another poll. POLL 3 ... Which of the following most closely approximates the risk of acquiring Cat Scratch Disease in the United States?

<table>
<thead>
<tr>
<th>Option</th>
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<tbody>
<tr>
<td>A. 1 in 100 people</td>
<td>4 (13%)</td>
</tr>
<tr>
<td>B. 1 in 10,000 people</td>
<td>19 (63%)</td>
</tr>
<tr>
<td>C. 1 in 100,000 people</td>
<td>7 (23%)</td>
</tr>
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</table>

Michael Lappin: Thanks for playing! It is about 1 in 10,000... definitely an important zoonosis! In the United States, the incidence of CSD was estimated at 9.3 cases per 100,000 people per year. In 2000, it was estimated that hospitalization rates for treatment of CSD were 0.60/100,000 children under 18 years of age and 0.86/100,000 children under 5 years of age.

A question frequently asked is ‘Do all people exposed to Bartonella spp. become ill?’ Bartonella spp. infection does not always result in recognized illness; clinically healthy, seropositive people have been detected in a number of studies. There are many possible mechanisms for Bartonella-associated illness in people. Pathogenic potential may vary among different Bartonella spp., genotypes within a species, individual isolates, and host species that is infected. In people, disease associated with Bartonella spp. varies according to the immune status of the host.

For those who become ill, pathological changes include a focal suppurative reaction seen in classical CSD of immunocompetent people, an angioproliferative response to infection seen with bacillary angiomatosis in immune suppressed people, an endovascular proliferation of the organism seen with endocarditis, or an exaggerated inflammatory response to the organism as occurs with meningoencephalitis. It is likely that these factors play a role in the development of illness in some cats.

Because we as veterinary health care providers touch cats frequently, we are at occupational risk for exposure. Avoid bites and scratches and wash your hands after handling cats with fleas. The people that get CSD are having a hyper response to the organism. Since it is an immune phenomenon, antibiotics do not work that well.

Jennifer Park: Is there an increased risk of infection in vets?

Michael Lappin: Results of those studies have been variable, but it is definitely an occupational risk! You don't even have to be bit or scratched... you could rub infected flea dirt in a hangnail.

Diane Shepherd: If it is a hyper response why do immunosuppressed people have worse disease?

Michael Lappin: CSD is usually in the immunocompetent...hyper response - overgrowth of the bug occurs in those with immune deficiency. Peliosis and angiomatosis are common and usually respond to antibiotics.

Michael Lappin: Let's shift to sick cats... POLL 4 ... Have you diagnosed clinical bartonellosis in cats in your clinic?

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<tr>
<th>Option</th>
<th>Percent</th>
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<tbody>
<tr>
<td>A. Yes</td>
<td>8 (28%)</td>
</tr>
<tr>
<td>B. No</td>
<td>21 (72%)</td>
</tr>
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Michael Lappin: It is a tough one to diagnose for certain! I think I have made my diagnoses, but it is complicated.

Another common question we receive is ‘Do experimental or controlled studies document clinical bartonellosis in cats?’ Results of studies in which B. henselae or B. clarridgeiae were inoculated into cats experimentally have given variable clinical results but the studies cannot be compared directly because of differences in isolates used and study design.

Fever, loss of appetite, transient mild anemia, red swellings at the injection site, lymphadenopathy, exaggerated or diminished response to stimuli, aggressive behavior, focial seizures, dystagmus, and generalized tremors were detected transiently in some cats. Histopathological lesions have been detected in some cats experimentally inoculated with B. henselae or B. clarridgeiae. Peripheral lymph node hyperplasia, splenic follicular hyperplasia, splenic microabcesses and hepatic abscesses, lymphohcytic cholangitis/pericholangitis, lymphohcytic hepatitis, lymphoplasmacytic myocarditis, and interstitial lymphohcytic or pyogranulomatous nephritis were detected in some cats. The results of these studies suggest that Bartonella spp. infection could be considered on the differential list for a number of medical problems in cats. However, our panel believed that further work is needed to determine what actual causal associations may exist among Bartonella spp. infections and any clinical syndromes in cats.

There have been a number of studies of naturally infected cats that attempt to determine the spectrum of Bartonella spp. associated illness in cats since most naturally-infected cats exhibit no clinical signs.

Corinne Thomas: Should we test any cat with some of those clinical signs even though CO is low in prevalence?
Michael Lappin: Great question.....The first case of BH uveitis was proven in Colorado! Over on the western slope.....Dr. Black and I published it in 1999 I think. One fatal case of B. henselae associated endocarditis was reported in a cat. Several case reports provide evidence of Bartonella spp. exposure in cats with oculocutaneous disease and subsequent response to therapy with drugs with presumed Bartonella activity.

The following are several citings if you are interested:


Michael Lappin: Peer-reviewed seroepidemiologic studies that attempt to link Bartonella spp. to disease in cats have been published from the United States, Japan and Switzerland. The following are the citings:


Michael Lappin: A lot of the papers were in journals we don't usually read. I hope the panel report will summarize them for you. In the study from Switzerland, prevalence rates were similar in Ill and clinically healthy cats but the Ill B. henselae seropositive cats were more likely than the ill seronegative cats to have stomatitis and diseases of the urinary system.

In the study from Japan, coinfection of cats with feline immunodeficiency virus and Bartonella spp. was associated with an increased risk of lymphadenopathy and gingivitis. In the study from the United States, Ill B. henselae seropositive cats were more likely than Ill seronegative cats to have hematuria. Bottom line is that some cats are likely to become ill from Bartonella spp. infection, but because there is no diagnostic test result that correlates to illness, and because positive test results are very common in states with fleas, it is virtually impossible to determine which individual cat has clinical bartonellosis.

I personally think the data supports uveitis, fever, and lymphadenopathy the best. We are going to need more work to determine which other syndromes are common.

The major problem we have is the lack of tests that prove DISEASE. We are great at proving infection! But not disease... THINK FIP "tests".

Michael Lappin: So let's talk tests! We receive many questions concerning testing cats for Bartonella spp. infections. The following are a group of statements from the Panel Report.

**Culture of blood or tissues, amplification of Bartonella DNA by PCR assay of tissue and body fluids, and detection of antibodies in serum, aqueous humor, or CSF can be used to assess individuals for Bartonella infection** and are commercially available in the United States and some other countries. Proving the presence of Bartonella spp. in blood or tissues indicates current infection and it was the consensus opinion that culture is the gold standard technique for proving infection. The major limitations are the requirement for a specialized laboratory and the length of time for return of results because of the slow growth of the organisms. There are many seroreactive, culture result negative cats; it has often been assumed these cats had eliminated the infection. However, other possibilities are: the bacteremia was intermittent and not present in the sample cultured; the number of organisms were below the sensitivity limit of the assays; the organism died in transport to the laboratory; the culture was not held long enough; or the serological test result was falsely positive.

Whew! There is A LOT of work going on with Bartonella tests. I am sorry to report that I personally have failed miserably in making a test to PROVE DISEASE. New media to support the growth of Bartonella spp. in culture have recently been reported and may improve the ability to culture Bartonella spp. from blood or other tissues of cats. The following is the citing:


Although positive blood culture results prove Bartonella spp. infection in cats, they do not prove the cat is clinically ill from the infection.

Amplification of Bartonella spp. DNA from feline blood in EDTA, other fluids, or tissues has been used in many studies. PCR assays require specialized laboratories, require stringent quality control to avoid both false-positive and false-negative results, can be expensive to perform, and are currently not standardized among laboratories. However, results can be obtained more rapidly than from culture. **True positive PCR assay results document presence of organismal DNA but do not prove the organism was alive or prove that the cat was clinically ill from the infection.**

False negative PCR assay results could occur because of intermittent bacteremia, previous use of antibiotics, lack of microbial DNA in the sample tested, or inhibitory or interfering substances in biologic specimens. Bartonella spp. DNA can also be amplified from tissue, CSF, and aqueous humor; however, any blood contamination of the fluid or tissue being tested could give a positive test result.

Antibodies against Bartonella spp. have been detected in serum of cats and humans primarily by use of **immunofluorescent antibody assay (IFA), enzyme linked immunosorbent assay (ELISA), or western blot immunoblot assay.** Western blot immunoblot assay has the advantage of determining the immunodominant antigens recognized by the immune response. I personally like the PCR assay for cats as they usually have a level of bacteremia that can be amplified. I use it in combination with serology for A list clients with sick cats.

The speed of return of results from PCR versus culture fits with my clinical course to a case. Since dead organism DNA is cleared readily, a PCR positive cat is probably still infected, but still DOES NOT PROVE DISEASE.... OUCH!!

Let me add that most labs doing PCR can turn the test around in 24 hours. However, it depends on the lab how often the offer the assay weekly... culture takes 10-14 days. Antibodies against B. henselae generally cross react with B. clarridgeiae and other Bartonella spp. so a positive test result cannot discriminate the infective species.

**Serum antibody tests** can be performed quickly and are inexpensive but there is currently no standardization among laboratories in the United States. A positive antibody test result suggests exposure to a Bartonella spp. but it does not prove current infection and a negative test result does not exclude infection.

The reported positive predictive values of IFA or ELISA (anti-IgG) serologic tests for B. henselae or B. clarridgeiae bacteremia are 32-46%, and the reported negative predictive values are 85-97%. Therefore, less than half of antibody result-positive cats may be actively infected and 3-15% of antibody result-negative cats may be bacteremic. Because of the difficulty in proving clinical bartonellosis in cats, sensitivity, specificity, and predictive values of Bartonella spp. antibody tests for Bartonella associated illness in cats have not been determined.

- There is no antibody class response (IgM or IgG), no antibody titer magnitude, and no antigen recognition pattern by western blot immunoblot assay that consistently correlates with the presence or absence of clinical disease. While increasing antibody titers can be detected in some cats, this only indicates active infection, not clinical
illness resulting from infection.

So in my opinion and that of the Panel... the clinician has to combine a number of things when trying to prove clinical bartonellosis. The following is the Panel recommendation for testing clinically ill cats for Bartonella spp. infection.

It is the consensus of our panel that there is no single test result that can prove clinical bartonellosis in cats. The combination of all of the following findings may aid in the diagnosis:

* Presence of a syndrome reported to be associated with Bartonella spp. infection;
* Exclusion of other causes of the clinical syndrome;
* Detection of a positive Bartonella spp. test (culture, PCR assay, or serology); and
* Response to administration of a drug with presumed anti-Bartonella activity.

In addition, because the antibiotics used for the treatment of bartonellosis in cats generally have a broad spectrum and are effective for other infecting organisms which can cause syndromes resembling bartonellosis, even when these criteria are fulfilled, the diagnosis of clinical feline bartonellosis is not definitive.

Michael Lappin: Are there questions or comments? Don’t you guys love these SIMPLE answers!

Jeff Richman: So, is this a necropsy Dx?

Michael Lappin: Good question! There are characteristic lesions, and organism can be detected in tissue, but fatal cases seem unlikely.

Diane Shepherd: So what about latency?

Michael Lappin: I am not sure it is a true latency or just "hiding" in the erythrocyte. While in that cell, replication is non-existent. However, like people, some cats may have a hyper response to the agent.

I forgot to mention one of our studies. We were excited if BH could be causing hemolytic anemia in the cats that were hemoplasma negative, but we could not link BH to anemia. That paper should be out soon.

Michael Lappin: We’d better move on! POLL 5 ... What antibiotic do you prescribe for suspected feline clinical bartonellosis?

Results:

<table>
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<tr>
<th>Option</th>
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<tbody>
<tr>
<td>A. Doxycycline</td>
<td>56%</td>
</tr>
<tr>
<td>B. Azithromycin</td>
<td>44%</td>
</tr>
<tr>
<td>C. Rifampin</td>
<td>0%</td>
</tr>
<tr>
<td>D. Other</td>
<td>0%</td>
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Michael Lappin: I personally think both the first 2 are great answers. Let me show you the panel opinion. The Panel felt that because the diagnosis of feline bartonellosis is difficult and has not been standardized, optimal anti-microbial protocols for clinical feline bartonellosis are unknown. In vitro, Bartonella spp. are susceptible to many antibiotics but antibiotic susceptibilities do not correlate with clinical efficacy in people. Even in people for whom well-defined clinical syndromes are recognized, a consensus on optimal use of antibiotic therapy is not always reached. The following citing is a good resource for use of antibiotics in people:


My guess is that most cats are like people, particularly if immune competent. Antibiotic failure or success may relate to the pathogenesis of the individual syndrome and the immune status of the host. For example, in immunocompetent people with classical CSD, the organism is often present in low numbers in lymph nodes by the time of biopsy. In this situation, the clinical manifestations of disease may relate to the immune-mediated clearance of the organism, not organism replication explaining antimicrobial failure. Failure of antibiotic treatment may relate to the intracellular location of the Bartonella organism and replication rates. While many of the drugs used to treat CSD in people penetrate cells very well, each is primarily dependent on bacterial replication. In individual case reports in cats, therapeutic responses have been reported with doxycycline or azithromycin. However, both of these antibiotics have extensive anti-bacterial spectrums and also modulate immune responses, therefore apparently therapeutic responses may be related to anti-inflammatory effects (but the extent of these effects is unknown in cats).

The panel recommended reviewing the AVMA: http://www.avma.org/scienact/itlua/default.asp and AAFP statements:

http://www.aafponline.org/resources/practice_guidelines.htm on judicious use of antimicrobial agents prior to antibiotic selection.

We did feel it was important to make a recommendation... And so here it is! It was the consensus opinion of the panel that in general, drugs commonly used for humans (i.e., fluoroquinolones and azithromycin) should not be prescribed for routine bacterial infections of cats if an alternate choice is available. The following are some of the Panel's recommendations concerning antibiotics for cats with suspected clinical bartonellosis.

Doxycycline administered at 10 mg/kg, PO, q12-24hr or Amoxicillin-Clavulanate at 22 mg/kg, PO, q12hr for 7 days may be appropriate first choices for Bartonella-positive cats for which a definitive diagnosis is not known. If there is a positive response, treatment should be continued. If the cats have persistent clinical signs after 7 days and a further exhaustive search for an etiology has not yielded a definitive diagnosis, switching to Azithromycin (10 mg/kg, PO, daily for 1 week followed by q48 hrs) or a fluoroquinolone may be indicated. Optimal duration of therapy for any drug has not been determined, however, because the organisms are intracellular, continuation of treatment for a minimum of 2 weeks and at least one week past resolution of clinical illness may be prudent. Because cats with clinical bartonellosis are likely bacteremic, extreme care should be taken to avoid being bitten or scratched while administering drugs.

OK, so there have also been no "head to head" studies of doxycyline versus azithromycin in cats.

Michael Lappin: One controversial topic is whether to test healthy cats for Bartonella spp. infections. The following are excerpts from the Panel Report. Different authors have made varying recommendations on whether to test clinically healthy cats for Bartonella spp. infection.

The Guidelines for Preventing Opportunistic Infections Among HIV-Infected Persons, jointly authored by the United States Public Health Service and the Infectious Diseases Society of America, states 'No evidence indicates any benefits to cats or their owners from routine culture or serologic testing of the pet for Bartonella infection'. The citing follows:


It is the consensus opinion of this panel that there are currently not enough data concerning the benefit of performing Bartonella spp. tests on healthy cats to make a definitive recommendation for all cats. We believe it is prudent to discuss the advantages and disadvantages of Bartonella testing with each individual cat owner and document the discussion and outcome of the discussion in the medical record. Man! It seems we have to talk to clients about everything these days!

The following are some advantages and disadvantages concerning routine Bartonella spp. testing of healthy cats.

POTENTIAL ADVANTAGES

http://www.vin.com/Members/SearchDB/rounds/lc061105a.htm
* Cats with positive Bartonella spp. test results can be avoided, for example, for selection as blood donors or breeding animals.

* Cats with negative Bartonella spp. test results are less likely to be harboring the organism and so may be a safer pet than a cat with Bartonella spp. positive test results.

* Testing cats for Bartonella spp. may allow the veterinarian to avoid claims or litigation.

**POTENTIAL DISADVANTAGES**

* Bartonella spp. test results (particularly PCR and serology) can be falsely positive.

* Cats with positive Bartonella spp. serological test results are often considered dangerous but may have eliminated the infection and may be partially immune to re-infection.

* Detection of negative Bartonella spp. test results will lead to a false sense of security.
  -- Cats with negative Bartonella spp. test results at one point in time may be falsely negative.
  -- Cats with negative Bartonella spp. test results at one point in time can be infected and become bacteremic within 2 weeks if preventative measures are not taken.

* Detection of positive Bartonella spp. test results in some situations may lead to needless euthanasia.

* The expense of Bartonella spp. testing will lead to some owners avoiding ownership of an individual cat.

* Redistribution of limited funds to cover the expense of Bartonella spp. testing will result in some owners forgoing other needed and relevant health care like flea control.

The following are the Panel Recommendations to avoid bartonellosis. The AAFP Panel recommendations that follow were adapted from Guidelines for Preventing Opportunistic Infections Among HIV-Infected Persons (Kaplan et al 2002) and the AAFP Panel Report on Zoonoses: http://www.aafponline.org/resources/practice_guidelines.htm

* Flea control should be initiated and maintained year-round.

* If a family member is immunocompromised and a new cat is to be acquired, adopt a healthy cat > 1 year of age and free of fleas.

* Discuss the advantages and disadvantages of testing healthy cats for Bartonella spp. infections.

* Immunocompromised individuals should avoid contact with cats of unknown health status.

* Cat claws should be trimmed regularly, but declawing of cats is generally not required.

* Scratches and bites should be avoided (including rough play with cats).

* Cat-associated wounds should be washed promptly and thoroughly with soap and water and medical advice sought. While Bartonella spp. have not been shown to be transmitted by saliva, cats should not be allowed to lick open wounds.

**Michael Lappin:** Any questions?

Neil Tenzer: With spleen, liver lesions in exp. cases.....comment on Bx for further Dx?

**Michael Lappin:** Good question.....not sure we have enough data to recommend it.....however, in clinical cases that you think could be peliosis, the organism can be cultured or PCR from tissue and seen with silver stains. I still go indirect with my blood tests.

James MacDonald: How long after treatment would a cat be okayed back into a family with an immuno compromised child?

**Michael Lappin:** No definite consensus, but if the house and cat and other pets are "de-flea-ed" it is unlikely the cat is much risk. Most healthy cats are NOT treated.

The following are the AAFP Panel recommendations for decreasing the likelihood of pet cats becoming infected with Bartonella spp.

* Maintain an appropriate flea-control program year-round.

* Be cautious about adding stray cats or cats from shelters to the household without controlling fleas.

* Keep cats indoors to minimize hunting and exposure to fleas and other possible vectors.

Other issues concerning bartonellosis discussed in the panel report should also be considered with each individual family, for example, the complexities of diagnostic testing and the uncertainty of antimicrobial treatment efficacy. While Bartonella spp. are significant zoonotic agents, veterinary clinicians and their teams should focus on the entire cat and emphasize prevention of all zoonotic diseases (Brown et al 2002). **FLEA CONTROL ... FLEA CONTROL ... FLEA CONTROL !!!**

**Michael Lappin:** We look forward to getting the document on the webpage, but join AAFP > http://www.aafponline.org/membership/index.htm - if you haven't already! OK, I have a PhD dissertation to read! Give a shout if I can help....Sherri will keep me up on message board issues.

Sherri Williams: Please post any additional comments or questions on the message board here: http://www.vin.com/Members/BoardsMain/Boards.plx?Read=2868=CE8&id=169*2075*45824

Diane Shepherd: thank you
Sheila Schmeling: thanks for all the information
Roy Smith: Thank you!
Jane Brunt: Thanks Mike and thanks to Sherri for coordinating this!
Jeff Richman: Thanks, adios
Robert Knapp: Thanks, Great Info
Corinne Thomas: thank you Dr. Lappin, great rounds
Amy Lynn: Thank you.
Greg Benson: thanks
Dan Jones: bye and thank you
Michelle Lotsus: Thank you
Sharon Elman-Murray: thanks
Angelica Araya: thanks Dr. J. Thomas Mano: thanks
Coleen Harman: thank you so much!
Emilie Sorm: thank you

http://www.vin.com/Members/SearchDB/rounds/lc061105a.htm
Cindy Krane: thanks
Robert Michaud: Thanks - Good info

Michael Lappin: thanks everyone! LAP

Participants: Allyson Doerflinger, Amanda Hall, Amy Lynn, Angelica Araya, Beth Shannon, Cara Gardner, Carine Klimentidis, Carol Hillhouse, Chick Newman, Cindy Krane, Coleen Harman, Corinne Thomas, Dale Kressin, Dan Jones, David Wulf, Diane Shepherd, Diane Steinberg, Doris Lawrence, Emilie Sorm, Frank DeCecco, Greg Benson, Helen Sill, Herb Betts, J. Thomas Mano, James MacDonald, Jane Brunt, Jeff Richman, Jennifer Park, Joanne Gonzalez, Jon Spelke, Karen Ashby, Kathleen Donnelly, Kimberly Werner, Linda Scorze, Lisa Drabinsky, Lisa Watt, Margie Scherk, Marguerite Quinn, Mark Zimmerman, Michael Lappin, Michelle Loftus, Neil Tenzer, Raymond Raines, Renee Bourque, Robert Knapp, Robert Michaud, Roy Smith, Scott Nachbar, Sharon Ellman-Murray, Sheila Schmeling, Sherri Williams, Susan Little, Thom Haig, Tiffany Jurgens Rule

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A Friendly Reminder to our colleagues: Clinicians are reminded that you are ultimately responsible for the care of your patients. Recommendations and discussions of your cases should be considered as recommendations by colleagues for you to consider in your case management decisions. Dosages should be confirmed prior to dispensing medications unfamiliar to you.