

Kittens and Bartonella:

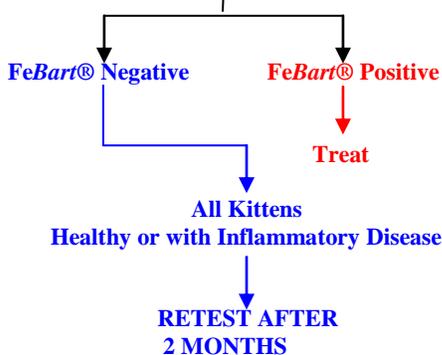
Kittens quickly become welcome members of many households each year and the special friends of children in those households. Children often allow kittens to lick their faces, to eat from their plates and to sleep in their beds. They also play more vigorously with the kittens than do the adults in the households thereby receiving playful bites and scratches more frequently than the adults. *Bartonella* organisms are found in the blood plasma, inside erythrocytes and endothelial cells and in tissues of infected cats. In order to be transmitted to people, the organism must be present on the claws (scratch), in the mouth (bites) or on the fur (contact- no abrasion) of infected cats. Infected kittens are rapidly growing and have changing dentition leading to the probability that *Bartonella* can leak into the oral cavity. The loss of kitten teeth or oral trauma due to rough play, chewing and playful fighting, can lead to *Bartonella* in the oral cavity. Cats groom themselves frequently thereby depositing *Bartonella* organisms from the oral cavity onto their fur or claws. The fact that kittens and children are both more playful toward each other presents the conditions needed for the zoonotic transmission from kittens to children.

Bartonella Tests for Kittens:

All newly introduced kittens, at any age, should be screened for *Bartonella* infection at their first examination. Since the FeBart® test is a test for antibody against various *Bartonella* proteins, a positive test in a kitten may represent maternal antibody or kitten antibody. The western blot technique is so sensitive that it can detect maternal antibody up to 7-8 months in many kittens. Irrespective of the source of antibody, all FeBart® test positive kittens should be considered infected and treated for their infection. Some kittens with maternal antibody will be treated needlessly; however, truly infected kittens are too dangerous not to treat.

FeBart® test negative kittens, 6 months old or younger, present a different problem for the practitioner. The negative test is most likely (83% or greater) to represent a truly uninfected kitten. However, we have retested FeBart® negative kittens, younger than 6 months of age, 8 weeks later, and found 17% of them converted to FeBart® test positive.

Updated Bartonella Test Algorithm for Kittens 6 Months Old or Younger



The first negative test was apparently taken, during the 8-week period, between infection and the kitten's production of antibody. *Bartonella* appear to be able to infect young kittens and

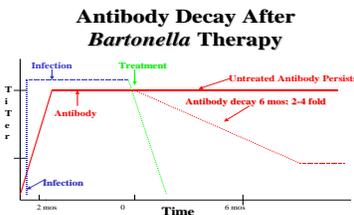
induce an inflammatory disease before the development of detectable antibody.

Bartonella Therapy Evaluation

Therapy Titration Test:

The most practical method to determine if the therapy for *Bartonella* infection has been successful is to monitor the antibody levels. A decrease in the antibody titer indicates successful bacterial therapy. As with any antigen or infectious agent, initial stimulation leads to rising antibody titers whereas, removal of the antigen or infectious agent, leads to eventual decrease in antibody titer. Therapeutic responses of many human disease agents are monitored by serological assays for antibody titer decreases: *Helicobacter pylori*- Gastric ulcers, *Treponema pallidum*- Syphilis, *Borrelia burgdorferi*- Lyme disease, *Brucella abortus*-Brucellosis, *Porphyromonas gingivalis*- Periodontal disease, *Burkholderia pseudomallei*- Melioidosis, *Coxiella burnetii*- Q Fever, and *Bartonella henselae*- CSD.

Figure 5



As seen in Figure 5, *Bartonella* infection leads to the production of detectable antibody, at high titers, by 8 weeks- rising titer. We found no decrease titers in 19 of 19 untreated *Bartonella*-infected cats (Figure 6). Conversely, removal of *Bartonella* by antibiotic therapy leads to the SLOW decrease in antibody titer as shown in Figures 5 & 7. It takes 6 MONTHS for the titer to decrease (antibody catabolism) 2 to 4 fold after clearance of *Bartonella*. When antibiotic therapy fails there is no decrease in antibody titer and re-treatment is required (Figure 8).

The screening test for infection, the FeBart® test, is too sensitive to use for detection of decreased titers since it is performed at a single dilution of 1:100. Many infected cats have titers of 1:256,000 or greater. Therefore, the Therapy Titration Test is required for determination of successful *Bartonella* therapy. This test consists of a total of 8 western blots, 4 blots for the pre-therapy sample (which we store in our freezers) and 4 blots for the post-therapy sample. Serial dilutions are tested for each sample to obtain end point titers for before and after therapy. A 4 fold or greater titer decrease indicates successful elimination of the bacteria. **PLEASE DO NOT REQUEST THE SCREENING FEBART® TEST FOR THERAPY EVALUATION.**

Figure 6



No Therapy: There is no decrease in titer after 3 years in this untreated *Bartonella*-infected cat.

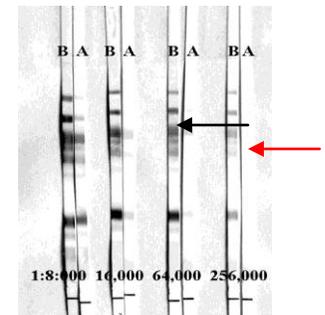


Figure 7 Successful Therapy: *Bartonella*-infected cat treated with azithromycin- 10 mg/kg once daily for 21 days. There is a 16-fold decrease in titer which indicates effective *Bartonella* therapy. Pre-therapy titer (B) is >1:256,000 (black arrow) whereas the post-therapy titer (A) is 1:64,000 (red arrow).

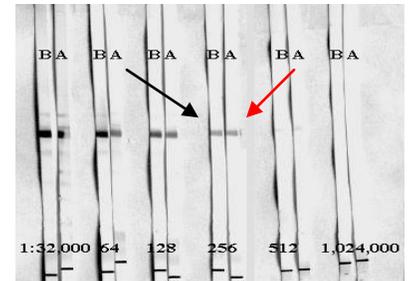


Figure 8 Therapy Failure: Azithromycin failed to decrease the titer, Before-therapy titer (B) is 1:256,000 (black arrow) and the after-therapy titer (A) is also 1:256,000 (red arrow).

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Bartonella references can be obtained at:
www.nlm.nih.gov/
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