Brucellosis in the United States - Current Perspectives

Moderator: Jean Jones

Presenter: Marta A. Guerra, DVM, MPH, PhD

Date/Time: August 25, 2011 3:00 pm ET

Julie (Operator)

All participants will be able to listen only until the question and answer portion of today's conference. To ask a question, please press star one. Today's conference is being recorded. If you have any objections, please disconnect at this time. I would now like to turn the conference over to Ms. Jean Jones. Ma'am, you may begin. (00:00:19)

Jean Jones

Thank you, Julie. Good afternoon, I'm Jean Jones and I represent the Clinician Outreach and Communication Activity, or COCA with the Emergency Risk Communications Branch at the Centers for Disease Control and Prevention. I am happy to welcome you to today's COCA webinar, "Brucellosis in the United States – Current Perspectives." We are pleased to have with us today, Dr. Marta Guerra, to discuss brucellosis and its impact on humans and animals. If you are listening to today's presentation by telephone, you may download the slides from our website, or you may participate online by webinar. The PowerPoint slideset and a PDF of the slides and the webinar link can be found on our COCA Web page at emergency.cdc.gov/COCA. Click on COCA calls, the webinar link and slideset can be found under "Additional Call Information." Here to provide an introduction to navigating today's webinar is Ms. Callie Campbell. (00:01:18)

Callie Campbell

Thank you, my name is Callie and I'm going to walk everyone through the tools available. This webinar should last approximately an hour. If you have a question for the presenter, you may use the Q&A button located at the top left portion of your screen. Type in your question and then hit "Enter" to send the question to the presenter. Questions will be read out loud to the group at the end of the presentation. But you may type in your questions at any time during the presentation.

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This meeting is being recorded. If you have technical difficulties at any time during this presentation, you may call our technical support line at 1-877-283-7062.

Thank you all for coming, Jean Jones is your host and she will be taking over the presentation from here. (00:02:08)

Jean Jones

Thank you, Callie. Our objectives for today's session are that you will be able to describe populations at risk for brucellosis in the United States, list brucellosis diagnostic methods available in the United States and advantages and disadvantages of each, discuss main causes of brucella exposure and risk assessments and discuss treatment regimens for brucellosis and patient follow-up.

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Today's presenter is Dr. Marta Guerra, a Captain of the U.S. Public Health Service, who is a senior epidemiologist in the bacterial special pathogens branch at CDC. In 2000, she was an E.I.S. Officer assigned to CDC's Viral and Rickettsial Zoonosis Branch. She has participated in numerous investigations and responses, including Ebola in Uganda, Avian Influenza in Nigeria, SARS, Monkey pox, Hurricane Katrina, and H1N1. In her current position, she's the subject matter expert for brucellosis and leptospirosis and is developing projects in Armenia and Eastern Africa. Her main interests are zoonotic diseases and GIS spatial analysis. Again, the PowerPoint slideset and webinar link are available from our COCA pages at emergency.cdc.gov/COCA. Please welcome Dr. Guerra. (00:04:17)

Dr. Marta Guerra

Good afternoon. Brucellosis is a zoonotic disease that is very prevalent worldwide, but rare in the United States. This presents a challenge for its recognition, diagnosis, and treatment. Although the number of human cases per year has remained stable, the risk groups and potential sources of infection are changing. Today, I will be discussing the history and epidemiology of brucellosis in the United States and sources of infection, surveillance for human cases, clinical presentation, diagnosis, and treatment, of current risk groups in the United States and a brief summary. (00:05:04)

Brucellosis is a zoonotic infection with a worldwide distribution. In addition to its importance as a human disease, it can have a serious economic impact in areas that depend on the raising of livestock. Brucellosis is an important cause of abortion and infertility in domestic, large animals; thereby reducing their reproductive efficiency. The worldwide incidence of human brucellosis is unknown due to lack of surveillance systems and adequate laboratory diagnostic capacity in countries where brucellosis is endemic. The map shows the countries where *Brucella abortus* and *melitensis* have been eradicated Canada, Australia, New Zealand, and a few countries in Northern and Western Europe. It is a significant health problem in the Mediterranean region, Western Asia, parts of Africa, and Latin America. (00:05:49)

In 1887, Sir David Bruce was the first to visualize *Brucella melitensis* in the spleen of a patient who died of Malta fever. He hypothesized that the micrococci he observed were the cause of the disease. The species *abortus* was identified in 1895 by Bernhard Bang, investigating infectious abortions in cattle. In 1920, the micrococci were renamed *Brucella*. Through 1968, four

additional species were identified. Since 2001, additional species have been identified. *B. ceti* and *pinnipedialis* in marine mammal species have caused disease in humans, and *B. inopinata* was isolated from a patient with an infection due to breast implants. The various *Brucella* species have a preference for certain animal hosts, which are primarily responsible for transmission. Secondary hosts may play a lesser role. Four species are well-known human pathogens: *abortus*, *melitensis*, and *suis*, which are category B select agents, and *canis*, which I will review in greater detail. There have been major efforts in the US to eradicate brucellosis. In 1934, USDA implemented the brucellosis eradication program to eliminate the disease in cattle. The program was expanded and adjusted in 1954 and in the 1970s. In 2008, there were no affected herds reported for the first time; however, this was only temporary. USDA continues surveillance efforts. In 1924, the pasteurized milk ordinance was passed, which assisted state and local governments in developing their own programs to prevent milk-borne diseases through pasteurization. This graph shows the number of human cases and the herd reactor rate from 1951 through 2001. As you can see, there was a precipitous decline through 1960 and the human cases continue to decline. For the last 20 years, the number of cases has fluctuated between 100 and 250 cases per year. The herd reactor rate reached a plateau in 1960, when changes were made to the program, which led to, also, another downhill turn. I will now review the species of *Brucella* that serve as sources of infection in the United States. *Brucella abortus* is primarily found in cattle, other primary hosts include bison, buffalo, elk, and camels. The obstacles to eradication of *Brucella abortus* in the U.S. has been its presence among the bison and elk populations in Yellowstone Park and its vicinity. There is also a risk of importation, especially along the southern border of the United States. (00:08:24)

The primary host of *Brucella suis* is swine, secondary hosts include horses, caribou, and reindeer. The cattle eradication program was expanded to swine in 1972 and currently brucellosis in commercial swine is only present in Texas. The potential for *B. suis* infection in the U.S. is due to its presence in the feral swine population. Feral swine are reported to be present in 33 states and their range is increasing. The largest populations are in California, Texas, Florida, and Hawaii. The primary hosts of *B. melitensis* are sheep and goats. This species was eradicated in sheep and goats by 1999 in the U.S. The last case was found in a Texas border county. It is now classified as a foreign animal disease. Dogs are considered the principal reservoir of *Brucella canis*. It is a cause of abortion and reproductive failure. It is a public health issue because of the difficulty of ascertaining that a dog that has been treated with antimicrobials has cleared the infection and is no longer shedding. Cases in dogs are usually found during investigations of outbreaks of abortions in kennels and shelters. Brucellosis is a nationally notifiable disease. The species *abortus*, *suis*, and *melitensis* are also considered select agents which require timely reporting. Cases are reported through the National Notifiable Disease Surveillance System. However, this system collects minimum information, such as age, sex, and state of residence. The species of *Brucella* is not reported, the method of confirmation is not reported, and no information is collected on exposure or risk factors. This graph just shows a magnified section of the cases from 1979 to 2009, which ranges from 100 to 200 per year. (00:10:13)

This map shows the human cases by state in 2009. Fifty-five percent of the cases were from Texas, California, Florida, Georgia, and Michigan. Most of the cases were reported in spring and summer. Seventy-two percent of the cases were in adults greater than 25 years of age. Sixty percent were male and 61% were Hispanics. In 2009, we worked with Wisconsin and New York State Health Departments to put together a position statement for the Council of State and

Territorial Epidemiologists. We revised the case definition to include symptoms that become apparent with chronic infections. Brucellosis is described as an illness characterized by acute or insidious onset of fever and one or more of the following: night sweats, arthralgia, headaches, fatigue, anorexia, myalgia, weight loss, arthritis spondylitis, meningitis, or focal organ involvement, which can include endocarditis, orchitis/epididymitis, hepatomegaly, and splenomegaly. (00:11:17)

The laboratory criteria for confirmation are culture and identification. The criteria for a confirmed case is culture and identification of *Brucella* species from clinical specimens, or evidence of a four-fold or greater rise in *Brucella* antibody titer between acute and convalescent phase serum specimens obtained greater than or equal to two weeks apart. The criteria for a probable diagnosis is *Brucella* total antibody titer greater than or equal to 160 by standard tube agglutination test, which is abbreviated SAT, or the *Brucella* microglutination test, abbreviated BMAT, and one or more serum specimens obtained after onset of symptoms, or detection of *Brucella* DNA in a clinical specimen by PCR Assay. (00:12:07)

A confirmed case is defined as a clinically compatible illness with definitive laboratory evidence of clinical infection, and a probable case is defined as a clinically compatible illness with at least one of the following: epidemiologically linked to a confirmed human or animal brucellosis case; presumptive laboratory evidence but without definitive laboratory evidence of *Brucella* infection. We have been developing a new case report form that will be released very soon. It will capture additional information on risk factors, mode of transmission, ethnicity other than Hispanic, and history of travel. There are several routes of transmission for brucellosis. Most common is ingestion of unpasteurized dairy products and also consuming undercooked meat from infected animals. Direct or indirect exposure of the organisms to broken skin or mucus membranes, which can occur through contact with aborted fetuses and placental fluids and tissues, and through the slaughtering and butchering process. Aerosol transmission is an important route of transmission through laboratory exposures. Person to person transmitted has been rarely documented with a few reports to infants through milk or in utero. Sexual transmission has been difficult to document in endemic areas, but there have been a few reports. (00:13:29)

Products of parturition are considered highly infectious and can contain up to ten to the tenth bacteria per milliliter. *Brucella* organisms can remain viable in placental tissues for a minimum of twenty weeks. Infectious aerosol dose can be as small as a hundred to one thousand organisms. The small infectious dose and ease of aerosolization are factors leading to its classification as a select agent. In the environment, the survivability of *Brucellae* are influenced by temperature, humidity, and PH. *Brucellae* are sensitive to direct sunlight, disinfectant, and pasteurization. In dry conditions, they survive only if embedded in protein. In optimal conditions, *Brucellae* survive in tap water, damp soil, urine, aborted fetuses, uterine exudate, and frozen tissues. *Brucellae* are small aerobic, gram negative coccobacilli. They are relatively fastidious and may require prolonged incubation for growth. In vivo, they are primarily intercellular pathogens, able to multiply inside of lysosomes of phagocytic cells. Lipopolysaccharide is the main surface antigen of *Brucellae* and is also a major virulence factor. Differences in the structure of lipopolysaccharide, either smooth or rough, help explain the differences in pathogeni*city between Brucella species. Those with the smooth coat are abortus, suis,* and *melitensis,* and also the marine mammal species. Those with the rough coat are *ovis* and

canis. Brucellosis starts out as a systemic infection that can spread to most organs. The infection initially localizes in regional lymph nodes. There is a bacteremic phase that can last two to eight weeks. Then the bacteria can localize in various organs, such as spleen, liver, bone marrow, joints, and reproductive organs. Infections due to *B. melitensis* have been considered to be the most severe, followed by *suis*, *abortus*, and *canis*. (00:15:32)

The incubation period averages from 2–4 weeks, but a very wide range has been reported in the literature, ranging from 5 days to 5 months. Acute brucellosis usually presents with a fever and flu-like non-specific symptoms. Early, more focal presentations can occur such as arthritis, meningitis, osteomyelitis, and endocarditis. Relapses and chronic disease can occur and it is often difficult to recognize, diagnose, and treat. Brucellosis could be considered chronic if symptoms are present for 6 months or more. The only symptom may be a continuous or intermittent fever. In approximately 30% of patients, localized infections can occur. Hepato and splenomegaly are seen in approximately 20–30% of cases. Osteoarticular complications are seen most often- 20–60% of the time. And genito-urinary complications can occur in men presenting as orchitis or epididymitis. (00:16:39)

Endocarditis is only seen in 2–3% of cases, but it is the primary cause of mortality. Neurobrucellosis is rarely seen, but two of the three cases of brucellosis caused by marine mammal species presented with this manifestation. Brucellosis can also present with only neuro-psychiatric symptoms, such as depression, difficulty with concentration, and sleep disturbances. Culture and isolation is the diagnostic gold standard. The best yields are obtained from blood and bone marrow. PCR is usually performed after isolation. Performing PCR on whole blood has not been very successful, probably due to low levels of circulating antigen. Samples should be obtained prior to antimicrobial therapy. A culture can give a result down to genus, but species identification is usually performed at reference laboratories. Isolation of a select agent must be reported to CDC by the laboratory making the identification. Serology has been the most common method of diagnosis, but it is the most difficult to do appropriately. The acute phase serum should be obtained as soon as possible after fever onset. However, this sample will most likely be negative. A convalescent sample should be taken 14–21 days after symptom onset. The serum agglutination test (SAT) has been considered the gold standard. Over the next few slides, I will discuss the most common serological tests. (00:18:08)

The SAT measures agglutinating antibodies, which are usually associated with acute infections. It detects IgM and two types of IgG. The Rose Bengal test also measures the agglutinating antibodies. This test is useful for initial screening of samples. Neither of these tests is currently available in the US for human diagnostics. The Complement Fixation Test is useful as a confirmatory test because of its high specificity. The antiglobulin Coombs test is also useful as a confirmatory test. These tests measure blocking antibodies which are commonly seen in chronic infections. CFG titers also decline rapidly after successful therapy. However, neither of these tests are also available in the United States. ELISAs are commercially available in the US; however, there are several issues associated with these tests. The IgM assay has been associated with false positives. This has been reported in a recent MMWR. There is cross-reactivity occurring with other organisms, including *Yersinia enterocolitica*. Results are reported as qualitative, you cannot compare titers between samples. And positive results should be confirmed by a second method. It is useful for screening for epidemiological studies. A lot of

these tests are done in-house, and when it's done in-house, it does serve…it is very useful. (00:19:43)

The test performed at CDC is the *Brucella* microscopic agglutination test, which is a modification of the SAT. This test uses less antigen, has a shorter incubation time, and a large number of specimens can be tested in one run. Additional tests can be done to separate IgM and IgG agglutinating antibodies. The disadvantage to this test is that it may not be adequate to diagnose chronic infections. So to summarize the issues of diagnostics, currently, commercially available tests are not validated. Some of these IgM ELISA tests are associated with false positives. There is a need for acute and convalescent samples to confirm a diagnosis and it is very difficult to get that convalescent sample if the patient is not hospitalized. IgM and IgG may persist for up to one year with appropriate antibiotic treatment. IgG levels should start to decline with antibiotic treatment, but IgM may remain elevated. BMAT and other agglutination tests may not diagnose chronic infections. There is a lack of awareness that available serological tests cannot diagnose *B. canis* antibodies because the *B. canis* has the rough coat. And most of these tests usually use the *abortus* antigen. And most of these commercial tests report results that are qualitative and are very difficult to interpret. With regard to culture and isolation, lack of suspicion of brucellosis leads to a high rate of laboratory exposures. Identification of species are usually performed at LRN laboratories, since they are select agents. PCR is usually performed on isolates, not on blood or other clinical specimens. The treatment of brucellosis can be very complicated and frustrating, especially if the patient presents with a chronic infection. Brucellosis can be considered uncomplicated when it is early in the disease in the bacteremic phase before focal organ involvement. Doxycycline and rifampin are considered the first line antimicrobials, both for efficacy and ease of administration since they are both oral. Doxy-streptomycin combination is reported to have greater efficacy, however, streptomycin is injectable and difficult to obtain. (00:22:06)

Other alternative options include doxy for six weeks with gentaomicin for seven days, and this has comparable efficacy. And other combinations are doxy with fluoroquinolone or rifampin plus a fluoroquinolone, such as ofloxacin. However, these should not be considered first line therapies. For pediatric patients, children over eight years of age can receive the same regimens as adults. Children less than eight years of age can take rifampin and trimethoprim-sulfamethoxazole. For pregnant women, and those allergic to doxycycline, recommendations are TMZ-SMP or rifampin, in consultation with their healthcare provider. Use of TMZ-SMP has been associated with the development of resistance to *B. melitensis*, however. There are two excellent references at the bottom of this slide that review current treatment options. There are many antimicrobial combinations that have been used. The important point is that at least two antimicrobials should be used. For complicated cases, usually defined as cases with chronic symptoms, or with focal organ involvement, the duration of therapy may be as important as the choice of antimicrobials, since *Brucellae*,are intracellular, and slow growing, patients may require months of therapy to clear the organism. Longer courses of treatment are recommended for endocarditis, spondylitis, or neurobrucellosis. Relapses can occur in up to 15% of uncomplicated cases, usually caused by late initiation of therapy or premature discontinuation of therapy. The most common route of exposure is ingestion of unpasteurized milk and dairy products. Infection is usually due to *B. melitensis*. Persons at risk are immigrants and travelers to endemic countries. The dairy products are either consumed overseas and the person becomes ill after returning to the U.S. or products are brought illegally and distributed to family and friends.

There are unpasteurized dairy products that are sold legally in the United States however. Each state has its own regulations pertaining to the sale of raw milk and its products. (00:24:16)

We are collaborating with Mexico, border states, and the BIDS program at CDC, which is the Border Infectious Disease Surveillance program regarding these risk groups. Our projects are targeting specific groups that consume unpasteurized dairy products, such as Hispanic and Middle Eastern populations. We are also collaborating with USDA to enhance surveillance for *B. melitensis* for sheep and goats in ethnic markets. Our other current major risk group are hunters of feral swine. Hunters can become infected with *B. suis* while coming in contact with infected meat and other tissues while field dressing and butchering feral swine. We published an MMWR describing the investigation of hunters that hunted in Florida, but then returned to their home states and become ill. No family members became ill, which we suspect is due to the effectiveness of public health campaigns regarding the importance of not consuming undercooked pork. We have also developed an educational brochure with USDA for feral swine hunters. (00:25:23)

Another risk group is dog breeders and kennel workers, and also the persons working in veterinary clinics. The first human case due to *B. canis* was reported in 1968. There are not many cases reported, but then the appropriate tests for diagnosis are not available. We believe that brucellosis due to *B. canis* is underreported. Although it has been generally considered a mild disease, there have been reported cases of osteomyelitis and endocarditis. We have been involved in a working group assembled by the National Association of State Public Health Veterinarians, with the goals of increasing awareness of diagnostic issues, developing and standardizing guidelines for public health investigations, and exploring options for development of human serological tests. We are currently assisting states with the survey of veterinary laboratories and state health departments. A new risk group may be those that could be exposed through work with marine mammals. There have been a few reports of neurobrucellosis caused by these marine *Brucella* species. Populations at risk would include American Indian and Alaska Native hunters, marine mammal rescue workers, wildlife researchers, and veterinary staff. We are working with the Alaska State Health Department and the Arctic Investigations Program at CDC in an assessment of laboratory submissions and serological surveys. We are also collaborating with the National Institute of Occupational Safety and Health and the Rickettsial Zoonoses Branch at CDC in a serous survey of marine mammal rescue workers. (00:27:08)

The risk group that we deal with on an almost daily basis at CDC are laboratory workers. Brucellosis is considered one of the ten most frequently reported laboratory-acquired infections. Transmission can occur through inhalation or direct or indirect exposure of the organism to broken skin or mucous membranes. Infections can be acquired through the direct handling of the organism or being close to where the organism was handled outside of a biological safety cabinet. They can also be acquired when laboratory equipment malfunctions or accidents, such as dropping a plate, occurs. (00:27:45)

A multi-state, multi-lab exposure incident that occurred in 2006 led to the publishing of guidelines, which covered the tracking of isolates, risk assessments for potentially-exposed workers, and recommendations for post-exposure prophylaxis. We currently assist state health departments with the follow-up of exposure incidents, requiring information on the number of exposed workers, demographics, pregnancy status, risk assessment, post-exposure prophylaxis compliance, serological results, and whether there was development of disease. We find out if

exposure incidents have occurred from state health departments, reports from Division of Select Agents and Toxins at CDC, and from sera and isolates submitted to the CDC laboratory. Laboratory workers are assessed as high or low risk based on exposure criteria. They are monitored by obtaining serial serological samples for BMAT testing, and post-exposure prophylaxis is recommended for high risk exposures. This information is analyzed frequently to evaluate program efficiency. This table shows the number of lab exposure incidents from January 2008 until June 2011. The number jumped dramatically from 2008 to 2009 and remained high in 2010. This may be due to better reporting of these incidents. The number of reported cases has not varied significantly from 2008 to 2010. It appears that there will be fewer exposure incidents in 2011 if the trend continues. (00:29:32)

However, in a comparison of cases reported to CDC on laboratory incidents, you can see that in 2010 and 2011 half of the reported cases have associated exposures. So although there have been fewer cases reported in 2011, there is the same proportion of exposures. *B. melitensis* and *B. suis* are the most common species identified. During this time period there were 1,090 exposed laboratory workers in 21 states. CDC processed 2,728 samples. During this time period, there were also 5 lab-acquired infections reported. Case A occurred in a research lab and we found out about this incident when the worker developed brucellosis. Laboratory workup on the isolate allowed it to be identified as a research strain. In Case B, we believe that the patient started PEP late, two weeks after the exposure. However, when she sought medical care, she did not share recent exposure history to *Brucella* with her physician. This resulted in additional exposures, six high risk and one low risk. For Case C, the isolate was misidentified in the laboratory twice, further workup revealed *Brucella* species, but no species identified. Case D had the same exposure and was diagnosed after Case C became ill. Case E was classified as high risk but declined post-exposure prophylaxis. And the processing of this isolate resulted in one high risk exposure. An interesting observation of this table is how long the incubation period was from what was probably aerosol exposures. Arranged from 12 to 22 weeks, much longer than what is usually reported. (00:31:23)

We are currently not making any changes to the current recommendations. We are considering obtaining additional serum samples from 8 to 24 weeks to cover the lengthy incubation period we have observed. Currently samples are recommended to be taken at zero, two, 4, 6, and 24 weeks post-exposure. To assist in the prevention of exposures, we are trying to increase physician awareness of brucellosis through various means, such as this presentation. We are trying to partner with entities that do laboratory training to train personnel on the proper handling of *Brucellae.* To prevent infection after an exposure, it is important that the exposure be identified early, that a risk assessment be conducted on each worker, and PEP be administered as indicated by the risk assessment results. (00:32:15)

So to summarize briefly this presentation, historically, brucellosis was considered an occupational disease caused by *Brucella abortus*. Currently, most infections are caused by *B. melitensis* acquired from consumption of unpasteurized dairy products, or *B. suis* acquired from exposure by hunters to infected feral swine. Recently, we have updated the case definition and laboratory criteria for confirmation, and we have developed a new case report-form that will be available shortly. Through this form we can capture additional data to characterize risk factors, identify trends, and record the infecting *Brucella* species. Regarding lab exposure interventions, while we have had a 50% increase in reported human cases from 2008 to 2009, there has been a

more than 300% increase in reported laboratory exposures. This raises the question of whether it is a true increase in number or increased recognition. We will see what happens for the remainder of 2011. These lab acquired infections demonstrate the need for prompt identification and assessment of exposure incidents, and initiation of post-exposure prophylaxis, adherence to CDC recommendations for PEP and monitoring, and the importance of banking of isolates from case patients for comparison, if an exposed worker develops brucellosis. The clinician's role in all this- we had hoped they would consider including brucellosis in differential diagnosis after evaluating risk factors, such as the travel history, unpasteurized dairy consumption, recreational activities and contact with animals. It is very important to indicate on the laboratory request form when brucellosis is suspected. This can help reduce laboratory exposures. As far as the role of the laboratorians, it is important that they review and update standard operating procedures, and provide regular training for employees. They should adhere to procedures for unknown samples. They should process gram negative or gram variable isolates in a biological safety cabinet when possible. They should notify receiving laboratories of suspected *Brucella* species. It's important for early identification of exposures, and it is important to complete required select agent paperwork. (00:34:40)

I would like to acknowledge my colleagues in the Bacterial Special Pathogens Branch, and our partners in the Division of Select Agents and Toxins and our state partners that assisted with this presentation. Thank you very much for your attention. (00:35:01)

Jean Jones

Thank you, Dr. Guerra. We will now open up the lines for the question and answer session.

Operator (Julie)

If you would like to ask a question, please press star one. You will be prompted to record your first and last name. Please unmute your phone before recording your name. To withdraw your question press star two. One moment. (00:35:25)

Jean Jones

Our first question is from Dave Ramsey, and he asks, are any particular breeds of cattle more likely—excuse me, I have…—more likely to be infectious?

Dr. Marta Guerra

At this point, we don't have any evidence that any breed of cattle is more likely to be infected. Or put the other way, we don't have any evidence of cattle being resistant to *Brucella*. (00:36:03)

Jean Jones

Okay, we have another question. Has the raw foods movement in the United States caused an increase in brucellosis due to a higher demand for unpasteurized milk?

Dr. Marta Guerra

We haven't noticed any increase in cases due to that. We are very concerned about this because some of these species, such as sheep and goats, do not go through the inspection process that cattle go through. So we, if they are coming across the border, or we really don't know what their status is. So it is definitely a concern for us and we are working with the foodborne division here at CDC to be able to put out educational materials. (00:36:50)

Jean Jones

Okay, another question is, what are the recommendations to lab staff who work in the same lab as a lab worker with confirmed *Brucella* infection?

Dr. Marta Guerra

We discussed this in, I think the question is what about a laboratorian present when one was exposed, we go into this in great detail in the MMWR, and usually we work directly with the states because each recommendation tends to be different for each situation. But usually we believe that anyone within five feet of an open plate should be considered a high risk exposure. For the rest of the room, you have to take into consideration the ventilation system and other factors. As far as persons walking through, usually it's a very detailed investigation to determine who is high risk and low risk.

Jean Jones

Thank you, please address the need to submit isolates of *Brucella* to your lab at CDC.

Dr. Marta Guerra

We definitely want everyone, as much as possible, to send in isolates to us. We want to have a library. One reason is for comparison, and another reason is for especially isolates from around the world, so that we can start seeing whether there are isolates that are specific to different geographic areas. The other reason is mainly for being able to trace back if a laboratory worker was potentially exposed to more than one isolate, we would be able to trace back and find out where the exposure was. (00:38:43)

Jean Jones

Okay, now I'd like to ask the operator if there are any questions on the phone?

Operator (Julie)

We do have a question, one moment. Danielle Stanek, your line is open.

Danielle

Hey, I have a question. Two questions. One for the—and I might have missed this piece—but of the lab people that did develop illness, how many of them took prophy? And the other question I have is—it was mentioned early on that the serology for clinical cases often would be negative for acute illness. Then would that be helpful? Is the serology helpful for lab exposures if that's the case? (00:39:36)

Dr. Marta Guerra

To address the first question, the one case started post-exposure prophylaxis late. And that is one of the factors that we believe, again, we don't know issues of compliance, or why this person would have come down with it, and this is a very long incubation period, but it was somebody who did not start PEP right away. The other case was someone who declined PEP who was considered high risk. As far as serology, it's the problem of needing that acute and convalescent sample for confirmation. Usually, many times, if that acute sample is negative, it will be assumed that the person will not be developing the disease, or physicians will start looking for

another cause for the disease and it is important to realize that first sample may be negative and we recommend the convalescent mainly for confirmation. If at all possible, the best thing is to get a culture going so that one thing we can have a positive identification, and the other thing is that we will actually know the species, so it will make it much easier to determine the exposure.

Danielle

And further, in the lab settings and I thought that maybe there was a good chance that they might develop titers prior to developing symptoms?

Dr. Marta Guerra

Well, the couple of papers that were very good at summarizing what happened with a couple of laboratory incidents, there was evidence that they started—they were converting before development of symptoms. And again, again, I don't know as far as how comparable the testing is, the testing was done in another country. But it doesn't, we still believe that it is worth doing the BMAT in case because it has been found that persons who start antibiotic treatment early, even before they develop signs if the serological results are positive, that they have a much shorter duration of disease and much less severe symptoms. (00:41:55)

Danielle

Thank you.

Jean Jones

Operator, are there any other questions from the line?

Operator (Julie)

Yes, we do have another question. One moment. Jim Kazmierczak, your line is open.

Jim

Hi Jim Kazpercek from the Wisconsin Division of Public Health, thanks Marta, nice presentation. My question is… well, it's more of a comment I guess… I think most folks from most health departments and clinical labs would probably know that you guys want *Brucella* isolates from human cases, and most of these are going to *abortus* or *melitensis* and a few *suis*, but I know from talking to you prior to this Marta that you are also interested in isolates of *B. canis* from veterinary diagnostic labs, and so uh, you might just want to address that. And also, you indicated to me earlier that the post-exposure assessment for lab workers in veterinary diagnostic labs exposed to B. canis is essentially the same as those exposed to *melitensis* or *abortus*. (00:43:06)

Dr. Marta Guerra

Let me do the second one first. Right now, we are in the process of trying to firm up our recommendations for *B. canis*. At this point, I feel that we really can't separate them out right now, because we really don't have enough information for *B. canis*. So we tend to consider the fact that there have been developments of serious disease with *B. canis*, that the recommendations would be the same at this time. But they are currently under evaluation. Could you repeat your first question? (00:43:46)

Jim

Well, basically, you mentioned that you would like isolates from clinical laboratories, and I was just going to point out that, my understanding is that you would also like isolates of *B. canis* from veterinary diagnostic labs as well. Is that true? (00:44:00)

Dr. Marta Guerra

At this point, I would have to check with our laboratory. But I believe they are interested in collecting any *B. canis* isolates, basically again to do molecular work and to see if there are differences and that would help us in an investigation.

Jim

Okay, I guess when you add a definitive answer to that, if they are interested in that, you might send out word either to me, and I could get it to the NASPHV folks, most of us have fairly regular contact with a lot of veterinary diagnostic labs so that might be a boost of numbers in the isolates that you are getting. (00:44:33)

Dr. Marta Guerra

And just want to re-emphasize then, on the human side, since there is no serological test for *B. canis*, if that is suspected at all, we would really appreciate cultures being taken to be able to obtain a diagnosis. (00:44:52)

Jean Jones

Operator, are there any further questions on the line?

Operator (Julie)

I'm showing no further questions.

Jean Jones

Okay, we have one last question that was sent in. Are there particular countries in Europe associated with *Brucella* and unpasteurized dairy products?

Dr. Marta Guerra

In Europe, was the question?

Jean Jones

Yes, are there are any particular countries in Europe associated with *Brucella* and unpasteurized dairy products.

Dr. Marta Guerra

Okay, many of the countries in Eastern Europe, the countries that were in the former Soviet Union, since 1990, their brucellosis vaccination programs have pretty much shut down. So there has been an increase in all of those countries of the incidence of brucellosis. In Europe right now, it's mainly, it's still present in the Mediterranean countries, and also present in Eastern Europe. (00:45:49)

Jean Jones

Okay, thank you very much Dr. Guerra, and everyone who had questions. On behalf of COCA, I would like to thank everyone for joining us today, with a special thank you to our presenter, Dr. Guerra. If you have additional questions for today's presenter, please e-mail us at COCA@cdc.gov and put Dr. Guerra's name in the subject line of your e-mail and we will send that question on to her for a response. Again, the e-mail address is COCA@cdc.gov.

The recording of this call and the transcript will be posted to the COCA website at emergency.cdc.gov/COCA within the next few days. Free continuing education credits are available for the call. Those who participated in today's COCA conference call and would like to receive continuing education credit should complete the online evaluation by September 25th, 2011, using course code EC1648. For those who will complete the online evaluation between Septemeber 26th, 2011, and August 25th, 2012, use course code WD1648. All continuing education credits and contact hours for COCA conference calls are issued online, through TCEonline, the TCE training and continuing education online system at www2a.CDC.gov/TCEonline.

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Thank you again for being a part of today's COCA webinar. Have a great day! (00:47:50)

Operator (Julie)

Thank you for your participation. You may disconnect at this time. (00:48:06)