Brucella Infection in Whales and Dolphins

What causes brucellosis?

*Brucella* spp. refers to a genus of bacteria that infect many terrestrial and aquatic vertebrates around the world. The disease, called *brucellosis*, is best known for its role in causing abortion in domestic livestock and undulant fever in people. The presence of *Brucella* in marine mammals was first recognized in the 1990’s, and appears to be endemic in many marine mammal populations globally. The population level significance of *Brucella* in marine mammals is still unknown.

How are marine mammals affected by *Brucella* infection?

*Brucella* spp. has been isolated from seals and sea lions and whales and dolphins that appear healthy and are showing no signs of disease. The following negative health outcomes have been found in cetaceans with *Brucella* infection:

- Abortion
- Meningoencephalitis (brain infection)
- Pneumonia
- Skin infection (blubber abscesses)
- Bone infection

What types of *Brucella* are found in marine mammals?

Both *Brucella ceti* and *Brucella pinnipedialis* have been found in whales, dolphins, seals and sea lions. Currently the genetic typing and identification of marine *Brucella* species is evolving and these species designations may change in the future and we learn more about the pathogens in marine organisms. Other species of *Brucella* have been detected in wild and domestic hoofstock, carnivores, rodents and fish.

Which cetacean species are affected by *Brucella*?

*Brucella* has been detected in the following cetacean species: Atlantic white-sided dolphin (*Lagenorhynchus acutus*), Bottlenose dolphin (*Tursiops truncatus*), Common dolphin (*Delphinus Delphi*), Harbor porpoise (*Phocoena phocoena*), Fin whale (*Balaenoptera physalus*), Killer whale (*Orcinus orca*), Minke whale (*Balaenoptera acutorostrata*), Pilot whale (*Globicephala spp.*), Sei whale (*Balaenoptera borealis*), Striped dolphin (*Stenella coeruleoalba*).
How does brucellosis spread among animals?
The primary method of spread between animals is through consumption of tissue and fluids left after delivery of a fetus. It can also be spread through inhalation, ingestion, contact with a wound, and during nursing and breeding. We do not know how it is spread in whales and dolphins.

Can I catch Brucellosis from swimming?
There are no reported cases where Brucella infection was associated with swimming. As a caution, people should not swim with open wounds or in the immediate area where a stranded animal is found.

For more information on Brucella and how it can be contracted by humans, please see the Center For Disease Control’s website http://www.cdc.gov/brucellosis/.

What guidance has been provided to the marine mammal stranding response teams regarding handling dolphins and potential human health impacts?
The Network normally follows safety precautions for handling stranded marine mammals as provided in each organization's safety plans and NOAA Fisheries' "Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release". In addition, we are working with the Centers for Disease Control and Prevention (CDC) to develop additional guidance for our network responders.

Have strains of marine mammal Brucella ever infected a human?
Brucella has never been documented in humans after direct exposure to marine mammals, though there has been a single case of occupational exposure in a laboratory worker that was obtained after working with isolates from an infected dolphin (Brew et al. 1999). Therefore, there is likely a low but possible risk of transmission of Brucella bacteria to animal care workers from infected animals at necropsy or from working with live animals.

Has this been found in any fish?
There is little in the scientific literature showing the presence of Brucella in fish. In nile catfish, Brucella was found on the skin of the catfish and the concern was with humans handling the fish and coming in contact with the bacteria. There was no indication of the Brucella infecting the fish and causing disease symptoms.

How can I find out more information on Brucellosis?
Visit the following online resources:

- **Brucellosis in general:**
  - Centers for Disease Control and Prevention (CDC): http://www.cdc.gov/ncidod/dbmd/diseaseinfo/brucellosis_g.htm

- **Marine Mammal Brucellosis:**
  - Centers for Disease Control and Prevention (CDC): http://www.cdc.gov/brucellosis/

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