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Raw Meat Diets Risky for Pets. Families

Uncooked foods may pose zoonotic risk.

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Feeding raw meat is a hot topic in veterinary medicine. Sled dogs and racing greyhounds have long been fed raw meat. Now, intensive promotion in hooks and especially on the Internet (e.g., www.bmrf-world.com and www.rawmeoty-bones.com) is generating widespread enthusiasm and discussion.

Advocates maintain that raw meat is nutritionally superior to processed foods and is "what nature intended dogs and cats to eat."

Because their wild relatives ate raw meat, promoters insist, domesticated species tolerate bacterial contamination in food without problems, even if they are pediatric, geriatric or critically ill animals.

However, two recent reports of deaths of animals fed raw meat highlight the fact that animals can and do become ill from organisms in raw meat.

The first was an investigation of an outbreak of Salmonella at a greyhound breeding facility in Colorado, which also reported illness ranging from mild clinical disease to severe diarrhea, and deaths in four- to eight-week old pups during the previous year. The dogs ate primarily raw meat diets.

This study showed that 93 percent of fecal samples from dogs were positive for Salmonella, as well as 100 percent of samples from the dogs' food bowls.

Thirty-three percent of samples from the meat, sold specifically for dogs and condemned for human consumption, cultured positive for Salmonella Newport. [Strohmeyer RA, Morley PS, Hyatt DR, Bolte DS, Tankson J, Fedorka-Cray P. Salmonella Newport outbreak at a greyhound breeding facility. Proceedings of the 83rd Annual Meeting of the Conference of Research Workers in Animal Diseases, St. Louis, 2002. Abstract 93.]

The second report involved two cats that died of Salmonella gastroenteritis and septicemia, after they had contracted the disease from the raw meat they had eaten.

This study, reported in the Journal of the American Animal Hospital Association [2003;39:538-542], was the first to illustrate a link between raw-meat diets and potentially fatal Salmonella infections in domestic cats.

According to a statement by Link Welborn, DVM, AAHA president, on the AAHA Web site, "Raw-meat-based diets have become increasingly popular among pet owners who believe the diets will improve the health of their pets, despite the growing body of information showing that these diets pose a health risk not only for the pets that consume them but also to their owners."

In fact, the U.S. Food and Drug Association's Center for Veterinary Medicine (FDA GVM) states in a 2002 draft guidance for industry7 document, "The FDA does not believe raw meat foods are consistent with the goal of
leant health risks, particularly when such products are brought into the home and/or used to feed domestic pets."

Three typical sources of raw meat for animals are: meat intended for human consumption; meat condemned for human consumption, from "4-D" animals (dead, dying, diseased or disabled); and meat from animals that died by means other than slaughter (hunting, roadkill, etc.).

All pose a risk of being contaminated with pathogens, as summarized in Table 1.

Risks to household members via contact with pets or cross-contamination from utensils and dishes is especially worrisome for children, seniors and immunocompro-mised individuals.

Raw-meat promoters contend, too, that uncooked food is more easily digested because it still contains enzymes that cooking destroys.

What enzymes are these? What is their source? This information has yet to be specified. The digestibility of tough, fibrous meat may, in fact, improve with cooking, because collagen in the meat coagulates above 80 degrees Celcius to form gelatin.

For raw diets containing plant matter, cooking improves digestibility by rupturing cells, softening cellulose, reducing size of macromolecular compounds and denaturing toxins and digestion-reducing compounds.

Raw-meat proponents often supplement food with vitamins and minerals, although an evaluation of raw-food diets for dogs by Freeman and Michel (JAVMA 2()01;218(5):705-709) still demonstrated that "All the [raw] diets tested had nutrient deficiencies or excesses that could cause serious health problems when used in a long-term feeding program."

Ideally, clients should consult a credentialed veterinary nutritionist about proper dietary formulation.

The most common nutrition imbalances involve calcium, phosphorus, essential fatty acids, trace minerals and vitamins. Hypervitaminosis A appears if raw liver constitutes a large proportion of the diet.

Some clients assume that feeding bones will provide dietary calcium, but large pieces of bone are not easily digested or absorbed.

The FDA's Center for' Veterinary Medicine advises
any form other than ground, because of the risk of dental and gastrointestinal trauma.

Veterinarians should communicate the risks of raw meat to well-meaning clients who may otherwise be convinced that these diets will keep their animals in peak condition.

Veterinarians also need to be aware that recommending raw-meat diets could have legal consequences if untoward consequences result. Clients insisting on raw diets should learn about the infectious organisms they contain and
take adequate precautions to prevent cross-contamination to other family members.

Handwashing is essential, and children feeding the meat should receive supervision and instruction on proper food and utensil handling. Dishes require thorough disinfection, and clients should remove uneaten food promptly.

TABLE 1

**Agents of Infectious Disease Found in Raw Meat Diets for Dogs**

**Bacillus anthracis**
• Occasionally occurs in North America
**Burkholderia (Pseudomonas) pseudomallei**
• May be present in meat from horses with glanders.
**Campylobader spp.**
• Frequent cause of human enteric infection in the U.S.
• Household contact with dogs is significant risk factor for humans for campylobacteriosis.
• Common contaminant of raw poultry.
**Clostridium botulinum**
•C. botulinum toxin may occur in bacon and harm dogs if not destroyed by cooking.
**Clostridium perfringens**
• Common cause of enteritis in dogs.
**Diphyllobothrium latum, Opisthorchis tenuicollis, Dioctophyme renale and Nanophyetus salmincola (the vector of Neorickettsia helminthoeca)**
• Food-borne parasites in raw fish.
**Echinococcus multilocularis, and £ granulosus**
• Transmissible from dogs to humans, cattle, swine and sheep.
**Ecoli 0157:H7**
• Identified in dog feces.
• Documented to cause illness in greyhounds fed raw meat.
**Francisella tularensis**
• Endemic in rabbits, muskrats and beavers.
**Listeria monocytogenes**
• Reported to cause abortion in dogs.
**Mycobacterium bow's and M. tuberculosis**
• From organ meat in infected livestock and in wildlife reservoirs.
**Neospora caninum**

• Dogs eating infected tissues (aborted fetuses and placentas) can become ill and shed oocysts in feces, passing infection to cattle.

**Pseudorabies (Aujeszky's disease)**

• Documented in dogs fed lungs from infected pigs.

**Rabies**

• Potential public health risk.

**Salmonella spp.**

• Frequent contaminants in raw meat.

• Sa/mone//a-related gastroenteritis outbreaks in dogs fed raw meat are well-documented.

• Zoonotic potential if proper hygienic practices are ignored.

• Dogs may become subclinical carriers.

**Sarcocystis spp.**

• Dogs eating infected meat may excrete sporocysts into the environment and present hazard for livestock.

**Staphylococcus aureus and Bacillus cereus**

• May produce toxin in moist food that incubates before feeding,

Taenia hydatigena and T. ovis

• Causes lesions in livestock that result in tissue condemnation at slaughter; dogs ingesting these tissues contaminate environment with eggs infectious to livestock.

**Toxacara canis and Baylisascaris procyonis**

• Infected dogs may shed infective eggs into the environment and transmit disease to other dogs or humans, where it can cause visceral larval migrans.

**Toxoplasma gondii**

• From swine; can infect dogs.

**Trichinella spiralis**

• From undercooked pork, walrus, seal and bear meat.

**Yersinia enterocolitica**

• Contaminates as much as 89 percent of commercially available raw meat

• Household transmission from dogs to people can occur.

Adapted from: LeJeune JT and Hancock DD. "Public health concerns associated with feeding raw-meat diets to dogs." JAVMA. 2001 ;219(9): 1222-1225.

**Advising Clients Who Feed Raw Diets to Pets**

....NAVC clinician's brief.....november.2005

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Food safety and nutritional integrity of raw meat or eggs are two important health issues that should concern veterinarians with clients who feed these items to the family pet. This article addresses food safety, because it is the more immediate health threat.

**Microbial Contamination**

Food is contaminated with microbes. Meat from healthy animals becomes contaminated at slaughter.

Meat surfaces become infected with microorganisms associated with food poisoning during handling, packaging, processing, storage, and transportation. Approximately one third of the poultry sold for human consumption has tested positive for Salmonella. Disinfected grade A eggs that caused salmonellosis were determined to have been contaminated during ovulation; as a result, they were contaminated with the bacteria before formation of the shell. Although many procedures have been incorporated into food processing procedures for both the meat and poultry industries to reduce the level of contamination, bacteria persist: All products should be considered contaminated. Raw-meat diets have been used by such industries as zoos, mink farms, and dog racing facilities; the FDA presumes these users are aware of the risks.

Thus, we should be concerned about pet owners who feed raw diets to their pets. Such diets have been documented to contain pathogenic Yersinia enterocolitica 4/0:3, Salmonella species, and Escherichia coli 0157:H7. Commercial raw products, sold frozen or freeze-dried, carry no claim to be pathogen-free; in fact, recent work strongly suggests that they are contaminated. Twenty-one commercially available raw-meat diets (beef, lamb, chicken, and turkey) cultured over a 4-month period were all positive for£ coli, and 10 were positive for S. enterica. The FDA now has guidelines for companies selling such products to pet owners.
Because most pathogenic organisms are found on the surface of the meat, searing the surface would significantly reduce the potential bacterial load. An option for pet owners who do not want to feed thoroughly cooked meat is to feed whole (not ground) meat, braise the surface, and feed the meat rare instead.

**Zoonotic Potential**
Pets fed contaminated raw meat shed viable organisms in feces. Evidence validates this public health risk. Salmonella was isolated from 80% of the BARF (i.e., bones and raw food) diets sampled and from 30% of the stools from dogs consuming those diets. Greyhounds and sled dogs fed raw-meat diets have been documented to shed the same subspecies of Salmonella in their feces as that found in their diets. Serovars of Campylobacter species isolated from the diarrhea of dogs was the same as that isolated from the poultry carcasses consumed by the dogs. Only 36% of healthy dogs and 17% of healthy cats harbor low levels of pathogenic salmonellae, which refutes the notion that most household pets are "naturally" infected with these species.

Individuals who clean the cat's Utter box or pick up their dog's stool should consider the feces contaminated with viable pathogenic microbes. Extra precautions should be taken when persons or pets in the household have immune-suppres-sive diseases, such as human immunodeficiency virus infection, feline leukemia, or feline immunodeficiency virus infection; are undergoing chemotherapy; or are using antiinflammatory medications. Extra caution should also be exerted in households with young children to prevent fecal-oral contamination.

**Handling Raw Diets**
Feeding infected raw diets increases the risk for infection of both human and animal household members. Humans can become infected with food-borne pathogens when handling contaminated meat and egg products. Household transmission of food-borne pathogenic organisms from dogs to humans has been documented.
Veterinarians are trained in zoonotic diseases and thus have a responsibility to inform owners who feed raw meat or eggs of these potential health dangers. Safe practices during handling of the food, feeding dish, and feces should be emphasized, and the need for good personal hygiene must be

reinforced. Veterinarians who recommend feeding raw meat or eggs without giving full disclosure of the risks and precautions may face legal ramifications. Salmonella, E. coli, and Campylobacter infection in humans are notifiable diseases, and physicians are required to report cases to local health departments.

**Dispelling the Myths**

The morphologic and pathophysiologic characteristics of the gastrointestinal systems of dogs, cats, and humans are remarkably similar. Many who advocate feeding raw diets contend that dogs and cats have a , more acid stomach and shorter gastrointestinal tracts than do humans, protecting them from pathogenic bacteria. However, there is no difference among these species in regard to gastric pH and no evidence to suggest the difference in length of the gastrointestinal tract is protective to dogs and cats. All three species manifest similar clinical signs after ingesting food contaminated with pathogens. The severity of these signs is related to the dose of microbes or toxin ingested as well as the condition of the host.

**Food Poisoning Frequency**

Frequency of food poisoning in pets is difficult to determine. Veterinarians presented with a family pet for intermittent episodes of vomiting or diarrhea would treat the case symptomatically and are unlikely to send samples for bacterial culture and polymerase chain reaction identification. Hence, most if not all cases of food poisoning in the family pet are not reported because of a low level of suspicion and financial constraints.

Raw-meat advocates do not deny but downplay the potential health risks. No scientific evidence exists that a raw diet is superior to any dry or canned pet food. As a result, this practice is associated with health risks to pet and family with no demonstrable benefit.