

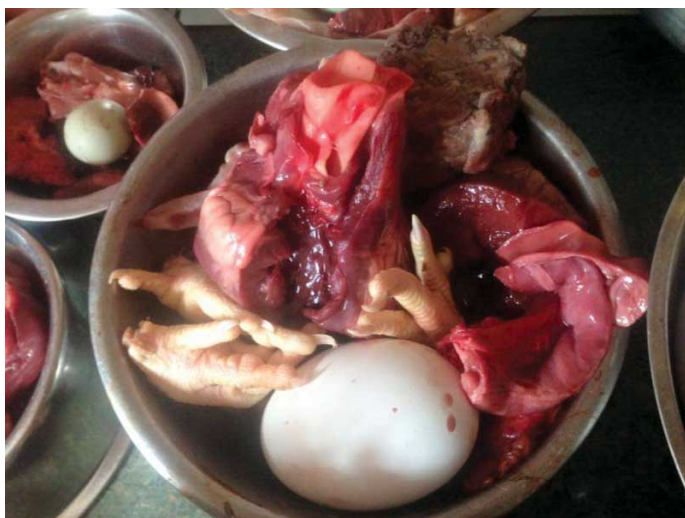
## Evidence-based nutrition: raw diets

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**Feeding raw diets to cats and dogs is becoming increasingly popular (Figure 1) and many clients of the Derby hospital I work in strongly believe they are healthier than commercially produced pet foods.**



**Figure 1.** Feeding raw foods to pets is increasingly popular.

Many vets probably know of someone who claims to have fed a raw diet to a pet that has lived a normal, apparently healthy life.

A cat or dog can meet all its basic nutritional needs from a raw carcass, as long as it obtains the correct balance of essential nutrients.

To my knowledge, commercially available raw foods or recipes for home-made raw rations have not been subjected to American Association of Feed Control Officials trials, or equivalent, to establish they are complete and meet nutrient requirements at all life stages.

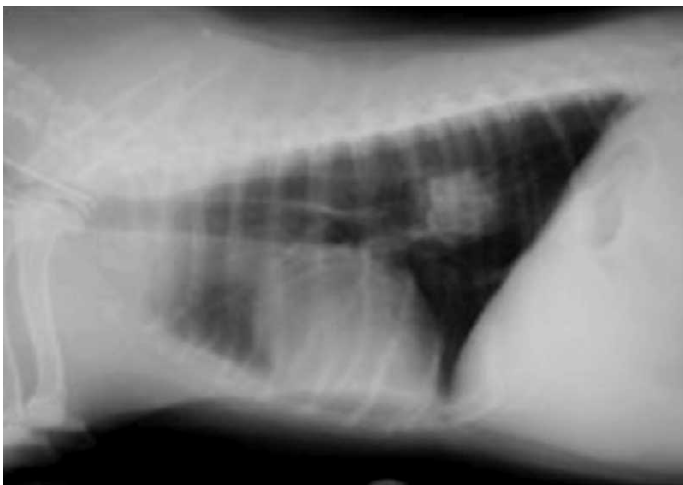
There is no evidence eating a raw diet provides better health than eating prepared food. Life expectancy for most wild species is considerably shorter in the wild than their counterparts kept in captivity and overall disease prevalence is as high/higher in wild dogs and cats. However, we cannot attribute these just to better nutrition; other factors include vaccines, parasite control and

reduced exposure to environmental hazards.

## Disease risks

Cats and dogs can develop serious nutrition-related diseases when fed raw diets. The diets also pose health risks.

In the Derby area, it is popular to feed whole chicken or duck necks to dogs. I have seen dogs in distress having swallowed a large section of avian cervical vertebrae intact. Most recover after surgery.



**Figure 2.** Intrathoracic oesophageal obstructions can be difficult to remove and may be fatal if they perforate the oesophagus.

A common location for obstruction with vertebrae is in the thoracic oesophagus (**Figure 2**) and sometimes they perforate the wall, resulting in mediastinitis and pyothorax.

I saw a young English bull terrier that was obstructed for a few days. At surgery to remove the vertebrae, the oesophagus was found to be necrotic and had perforated – with lumen contents leaking into the thoracic cavity. The dog died a few days later, despite intensive treatment involving chest drains, IV fluid therapy and antibiotics.

One study (Allan, 2015) reported volvulus of a small intestine loop after obstruction with a chicken wing that a dog consumed as part of its raw diet.

Feeding an all-meat diet provides the animal with no calcium and a large amount of phosphate, causing a severe inverse Ca:P ratio. Nutritional secondary hyperparathyroidism is the result, with poor bone mineralisation and spontaneous fractures (**Figure 3**).

Raw liver is extremely high in vitamin A and regular consumption can cause hypervitaminosis A (**Figure 4**). The condition involves the development of bone exostoses around limb joints or involving cervical vertebrae, resulting in pain and restricted range of movement. Excessive intake of vitamin A in bitches during pregnancy can cause cleft palate in the puppies due to interference with the spacial alignment and fusion of bone plates during embryological development (**Figure 5**).



**Figure 3.** Poor bone mineralisation, thin cortices and spontaneous fractures in a cat with nutritional hyperparathyroidism.

It is well known taurine deficiency can result in dilated cardiomyopathy in cats and dogs (**Figure 6**), but it is less known deficiency during pregnancy can cause gross anatomical fetal abnormalities including congenital luxating patellae and pectus excavatum.

In one study (Glasgow, 2002), growing kittens were fed either whole ground raw rabbit or a complete commercial dry food. Growth rates were similar and palatability, stool consistency and skin and hair condition were considered better in the cats fed raw. However, 10 months into the study, one cat in the raw diet group died from dilated cardiomyopathy due to a severe taurine deficiency. When the rest of the raw group cats were scanned, 70% of them had heart muscle change compatible with taurine deficiency. This was a surprise as the raw diet contained more than the minimum recommended level of taurine. For some reason, it was not fully bioavailable.

Raw meats contain potentially harmful bacteria and, in some cases, parasites. While domesticated cats and dogs are relatively resistant to bacterial infectious agents as causes of gastroenteritis, they can and do acquire clinical disease from infected meats. There are several reports of racing sled dogs (Cantor et al, 1997), racing greyhounds (Stone et al, 1993) and guard dogs (Caraway et al, 1959) developing *Salmonella* infections after eating contaminated raw meat. There is also a report in cats (Stiver et al, 2003).

However, the biggest concern is health risks from feeding raw food to pets are not confined to pets. In the US, the Food and Drug Administration (FDA, 2015) issued this public health warning: "To prevent infection with *Salmonella* and *Listeria monocytogenes*, it's best if you don't feed your pet a raw diet."

Contact with pet treats made from pig ears, or with dogs that had eaten these treats, was the predominant cause of a serious outbreak of human *Salmonella* Infantis in Canada (Clark et al, 2001). Subsequent outbreaks have also been reported across North America (Public Health Agency of Canada, 2006; Finley et al, 2006). Analysis of randomly selected dried hide treats across the US and those entering the UK (Willis, 2001) found pathogenic *Salmonella* strains.

A study of 576 pet food samples (Nemser et al, 2014) found 66 samples containing *Listeria* (32 of those were *Listeria monocytogenes*) and 15 samples containing *Salmonella* – all in raw foods or jerky treats.

In another study (Joffe and Schlesinger, 2002), *Salmonella* organisms were isolated from 30% of 10 dogs fed home-made raw food diets, but none were isolated from 10 dogs fed commercial dry food.

The UK Food Standards Agency states there are 72,000 cases of *Campylobacter* infection per year

and more than 100 human deaths. The estimated cost is £900 million to the UK economy. Around 65% of fresh chicken is contaminated with *Campylobacter* (UK FSA, 2015).

In New Zealand, 50 samples of raw meat diets acquired from supermarkets and pet stores were tested for *Campylobacter* (Acke et al, 2011). Twenty-one of these diets (42%) tested positive and more than half the bacteria identified were the type most commonly associated with illness in humans.

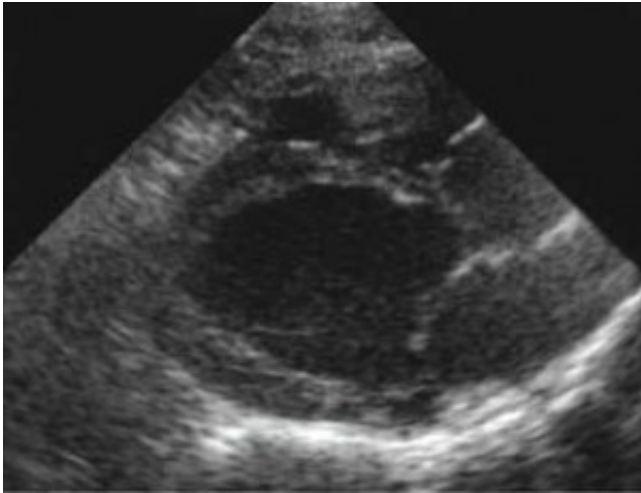
In a critical review of raw food diets (Schlesinger and Joffe, 2011), the authors concluded: “Although there is a lack of large cohort studies to evaluate risk or benefit of raw meat diets fed to pets, there is enough evidence to compel veterinarians to discuss human health implications of these diets with owners.”



**Figure 4.** Hypervitaminosis A in a cat that ate raw liver, showing exostoses around the elbow joint.



**Figure 5.** Congenital cleft palate can result if a bitch ingests too much Vitamin A in supplements or by eating liver during pregnancy.



**Figure 6.** Dilated cardiomyopathy due to taurine deficiency.

## Frozen foods

Freezing does not kill:

- *Escherichia coli* (Dominguez and Schaffner, 2009).
- *Listeria* (Novak, 2003).
- *Salmonella* is not killed by freezing and numbers increase on thawing (Sorrells et al, 1970). In one study, healthy dogs fed thawed frozen foods naturally contaminated with *Salmonella* were infected after a single meal and shed the same strain into their environment (Finley, 2004).
- *Campylobacter* – a study for the Food Standards Agency on whether freezing chicken livers helped reduce levels of *Campylobacter* showed a decrease after freezing, but, importantly, did not eliminate the bacteria (UK FSA, 2015).
- Clostridia – freezing does not affect spores or toxins that can result in gastrointestinal signs or botulism (paralysis) (FDA, 2015). Although rarely reported, I have seen cases of botulism in dogs that ate rotting carcasses found on the banks of the Mersey.

In the UK, strict regulations are in force controlling the animal by-product materials that can be used in pet foods, including commercially prepared raw foods (Defra, 2014). The regulations also insist raw foods are tested for bacterial infection, but only for *Salmonella* and *Enterobacteriaceae*,

and the testing frequency is variable.

Cooking, irradiation or pasteurisation are reliable methods for killing bacteria.

## Conclusion

It is irresponsible of the veterinary, veterinary nursing and allied professions to recommend raw diets because of:

- concerns about nutritional adequacy
- health risks to pets
- health risks to humans regularly handling raw foods, or living in a household where pets fed raw foods may shed pathogens into the environment

The first thing I was taught at university was “first do no harm,” so there is no prospect of me endorsing raw diets as it may result in harm to my patient or its owners, family or friends. I actively discourage my clients from feeding raw diets.

Apart from my conscience, I would also be concerned about the legal implications if a member of the public contracted a serious infection, or even died, as a result of increased exposure to risk from raw foods or pets fed raw foods after my recommendation.

- [In support of raw feeding as a responsible practice](#)

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