LETTER - RAW STAKEHOLDERS – REFERENCES

These are some references relating to the statements I made in my letter dated 1st February:

PATHOGENS IN RAW PET FOODS

1. Damborg, P. , Broens, E. M. , Chomel, B. B. , et al. (2016) Bacterial zoonoses transmitted by household pets: state-of-the-art and future perspectives for targeted research and policy actions. Journal of Comparative Pathology 155, S27-S40
2. Davies RH, Lawes JR, Wales AD. Raw diets for dogs and cats: a review, with particular reference to microbiological hazards. J Small Anim Pract. 2019 Jun;60(6):329-339. doi: 10.1111/jsap.13000. Epub 2019 Apr 26. PMID: 31025713; PMCID: PMC6849757.
3. Freeman, L. M. & Michel, K. E. (2001) Evaluation of raw food diets for dogs. Journal of the American Veterinary Medical Association 218, 705-709
4. Gonçalves-Tenório, A. , Silva, B. N. , Rodrigues, V. , et al. (2018) Prevalence of pathogens in poultry meat: a meta-analysis of European published surveys. Food 7, 69
5. LeJeune, J. T. & Hancock, D. D. (2001) Public health concerns associated with feeding raw meat diets to dogs. Journal of the American Veterinary Medical Association 219, 1222-1225
6. Lenz, J. , Joffe, D. , Kauffman, M. , et al. (2009) Perceptions, practices, and consequences associated with foodborne pathogens and the feeding of raw meat to dogs. Canadian Veterinary Journal 50, 637-643
7. Nemser, S. M. , Doran, T. , Grabenstein, M. , et al. (2014) Investigation of Listeria, Salmonella, and toxigenic Escherichia coli in various pet foods. Foodborne Pathogens and Disease 11, 706-709
8. Strohmeyer, R. A. , Morley, P. S. , Hyatt, D. R. , et al. (2006) Evaluation of bacterial and protozoal contamination of commercially available raw meat diets for dogs. Journal of the American Veterinary Medical Association 228, 537-542
9. Suzuki, H. & Yamamoto, S. (2009) Campylobacter contamination in retail poultry meats and by-products in the world: a literature survey. Journal of Veterinary Medical Science 71, 255-261
10. van Bree, F. P. J. , Bokken, G. C. A. M. , Mineur, R. , et al. (2018) Zoonotic bacteria and parasites found in raw meat-based diets for cats and dogs. Veterinary Record 182, 50-50
11. Weese, J. S. , Rousseau, J. & Arroyo, L. (2005) Bacteriological evaluation of commercial canine and feline raw diets. Canadian Veterinary Journal 46, 513-516

ENVIRONMENTAL CONTAMINATION WITH PATHOGENS FROM RAW FED DOGS

1. Cinquepalmi V, Monno R, Fumarola L, Ventrella G, Calia C, Greco MF, Vito Dd, Soleo L. Environmental contamination by dog's faeces: a public health problem? Int J Environ Res Public Health. 2012 Dec 24;10(1):72-84. doi: 10.3390/ijerph10010072. PMID: 23263659; PMCID: PMC3564131.
2. Damborg P, Morsing MK, Petersen T, Bortolaia V, Guardabassi L. CTX-M-1 and CTX-M-15-producing Escherichia coli in dog faeces from public gardens. Acta Vet Scand. 2015 Nov 25;57:83. doi: 10.1186/s13028-015-0174-3. PMID: 26608707; PMCID: PMC4660786.
3. Groat EF, Williams NJ, Pinchbeck G, Warner B, Simpson A, Schmidt VM. UK dogs eating raw meat diets have higher risk of Salmonella and antimicrobial-resistant Escherichia coli faecal carriage. J Small Anim Pract. 2022 Jun;63(6):435-441. doi: 10.1111/jsap.13488. Epub 2022 Feb 21. PMID: 35191029; PMCID: PMC9305152.
4. Mounsey O, Wareham K, Hammond A, Findlay J, Gould VC, Morley K, Cogan TA, Turner KME, Avison MB, Reyher KK. Evidence that faecal carriage of resistant Escherichia coli by 16-week-old dogs in the United Kingdom is associated with raw feeding. One Health. 2022 Jan 15;14:100370. doi: 10.1016/j.onehlt.2022.100370. PMID: 35146110; PMCID: PMC8802057.

BRUCELLOSIS

1. Frost, A. (2017) Feeding of raw Brucella suis-infected meat to dogs in the UK. Veterinary Record 181, 484-484
2. Mor, S. M. , Wiethoelter, A. K. , Lee, A. , et al. (2016) Emergence of Brucella suis in dogs in New South Wales, Australia: clinical findings and implications for zoonotic transmission. BMC Veterinary Research 12, 199

Campylobacter

1. *Acke, E. Midwinter, J. Collins-Emerson, J. French, N. Campylobacter species and multilocus sequence types from commercial raw meat diets for pets. Abstract, 2011 Congress of the European College of Veterinary Internal Medicine. J Vet Int Med 2011;25(6):1496.*
2. Bojanic, K. , Midwinter, A. C. , Marshall, J. C. , et al. (2017) Isolation of Campylobacter spp. from client-owned dogs and cats, and retail raw meat pet food in the Manawatu, New Zealand. Zoonoses and Public Health 64, 438-449

3. Campagnolo, E. R. , Philipp, L. M. , Long, J. M. , et al. (2018) Pet-associated Campylobacteriosis: a persisting public health concern. Zoonoses and Public Health 65, 304-311
4. CDC US Report of human outbreak of multi-drug resistant campylobacter infection involving 113 reported cases, across 17 States, 23 Hospitalisations, No deaths. 99% of people involved reported contact with a puppy in the week before illness started, most from a single pet store chain. https://www.cdc.gov/campylobacter/outbreaks/puppies-9-17/index.html
5. DEFRA Report of high prevalence of campylobacter infection in dogs in the UK (up to 70% in kennel dogs) http://randd.defra.gov.uk/Default.aspx?Module=More&Location=None&ProjectID=13608
6. Parsons, B. N. , Williams, N. J. , Pinchbeck, G. L. , et al. (2011) Prevalence and shedding patterns of campylobacter spp. in longitudinal studies of kennelled dogs. The Veterinary Journal 190, 249-254

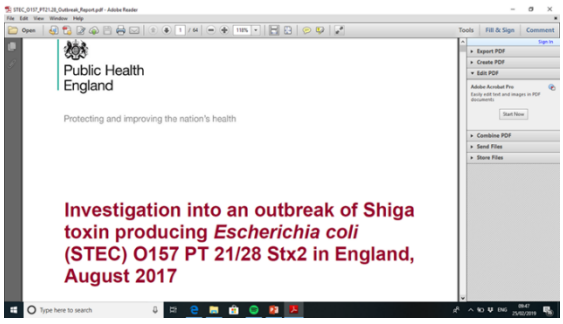
CLOSTRIDIA

1. (Public Health England 1992-2013 https://www.gov.uk/guidance/clostridium-perfringens). Bouttier S, Barc M-C, Felix B, Lambert S, Collignon A, and Barbut F. (2010) Clostridium difficile in Ground Meat, France Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 16, No. 4, April 2010 p733-4
2. Rodriguez-Palacios A, Staempfli HR, Duffield T, Weese JS. Clostridium difficile in retail ground meat, Canada. Emerg Infect Dis. 2007;13:485
3. Weese JS, Rousseau J, Arroyo L. Bacteriological evaluation of commercial canine and feline raw diets. Can Vet J. 2005;46:513
4. Jo Payne BVSc, PhD, MSc, MRCVS National Veterinary Advisor for Toxicology and Chemical Feed and Food Safety, APHA – Personal communication Botulism outbreaks http://www.fda.gov/AnimalVeterinary/ResourcesforYou/AnimalHealthLiteracy/ucm368730.htm

E.COLI

1. Byrne, L. , Aird, H. , Jorgensen, F. , et al. (2018) Investigation into an outbreak of Shiga toxin producing Escherichia coli, August 2017 (No. 2018489). Public Health England. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/748774/STEC_O157_PT21.28_Outbreak_Report.pdf.

2. Groat EF, Williams NJ, Pinchbeck G, Warner B, Simpson A, Schmidt VM. UK dogs eating raw meat diets have higher risk of Salmonella and antimicrobial-resistant Escherichia coli faecal carriage. J Small Anim Pract. 2022 Jun;63(6):435-441. doi: 10.1111/jsap.13488. Epub 2022 Feb 21. PMID: 35191029; PMCID: PMC9305152.
3. Leonard, E. K. , Pearl, D. L. , Janecko, N. , et al. (2015) Risk factors for carriage of antimicrobial-resistant Salmonella spp and Escherichia coli in pet dogs from volunteer households in Ontario, Canada, in 2005 and 2006. American Journal of Veterinary Research 76, 959-968
4. Naziri, Z. , Derakhshandeh, A. , Firouzi, R. , et al. (2016) DNA fingerprinting approaches to trace Escherichia coli sharing between dogs and owners. Journal of Applied Microbiology 120, 460-468
5. Nilsson, O. (2015) Hygiene quality and presence of ESBL-producing Escherichia coli in raw food diets for dogs. Infection Ecology & Epidemiology 5, 28758
6. Public Health England (2018) https://assets.publishing.service.gov.uk/media/5c17be22ed915d0c1bc0d5e6/STEC_O157_PT21.28_Outbreak_Report.pdf



In August 2017, 4 cases infected with genetically related strains of STEC O157 was identified. The strains possessed the stx2a toxin subtype, a toxin type known to be associated with more severe disease and the development of Haemolytic Uraemic Syndrome (HUS), a serious complication of this infection, predominantly affecting the kidneys. One case died following development of HUS. Public Health England will not confirm whether the death was one of the three children involved. Three of the cases had been exposed to dogs fed on a commercial raw meat based diet, one fed raw tripe.

7. Wedley, A. L. , Dawson, S. , Maddox, T. W. , et al. (2017) Carriage of antimicrobial resistant Escherichia coli in dogs: prevalence, associated risk factors and molecular characteristics. Veterinary Microbiology 199, 23-30

LISTERIA

1. Sarah M. Nemser, Tara Doran, Michael Grabenstein et al. Investigation of Listeria, Salmonella, and Toxigenic Escherichia coli in Various Pet Foods . FOODBORNE PATHOGENS AND DISEASE 2014 DOI: 10.1089/fpd.2014.1748

   Of 576 pet food samples analysed - 66 samples (11.5%) were positive for Listeria (32 (5.55% or more than 1/20) of those were Listeria monocytogenes) and 15 samples positive for Salmonella – ALL in raw foods or jerky treats

2. Pritchard, J. C. , Jacob, M. E. , Ward, T. J. , et al. (2016) Listeria monocytogenes septicemia in an immunocompromised dog. Veterinary Clinical Pathology 45, 254-259

SEE FDA PET FOOD RECALLS – MANY ARE DUE TO THE PRESENCE OF PATHOGENIC LISTERIA MONOCYTOGENES

https://www.fda.gov/animal-veterinary/safety-health/recalls-withdrawals

MYCOBACTERIUM BOVIS (TB)

1. Conor O'Halloran et al. Tuberculosis due to Mycobacterium bovis in pet cats associated with feeding a commercial raw food diet (2019) Journal of Feline Medicine and Surgery, 2019. DOI: 10.1177/1098612X19848455
2. Middlemiss, C. & Clark, J. (2018) Mycobacterium in pets. Veterinary Record 183, 571
3. O'Halloran et al (2018) Mycobacterium bovis in pet cats. The Veterinary Record 183 (16) 510
   The 3 cats in this report had never been outside the house and developed confirmed TB. Source not confirmed but they were fed RAW food
4. Conor O'Halloran et al. Tuberculosis due to Mycobacterium bovis in pet cats associated with feeding a commercial raw food diet. Journal of Feline Medicine and Surgery, 2019. DOI: 10.1177/1098612X19848455
   In this report 83 cats were confirmed with TB from eating a raw wild venison diet that was recalled. At this time Four owners and one veterinary surgeon were found to have high likelihood of latent tuberculosis infection. One owner required treatment.

5. Phipps E, McPhedran K, Edwards D, Russell K, O'Connor CM, Gunn-Moore DA, O'Halloran C, Roberts T, Morris J. Bovine tuberculosis in working foxhounds: lessons learned from a complex public health investigation. Epidemiol Infect. 2018 Oct 9;147:e24. doi: 10.1017/S0950268818002753. PMID: 30298799; PMCID: PMC6518589.
In this study one out of 11 people in contact with the pack of hounds tested positive for TB
6. Public Health England and Animal Health and Veterinary Laboratories Agency https://www.gov.uk/government/news/cases-of-tb-in-domestic-cats-and-cat-to-human-transmission-risk-to-public-very-low
7. Roberts T, O'Connor C, Nuñez-Garcia J, de la Rua-Domenech R, Smith NH, (2014) Unusual cluster of Mycobacterium bovis infection in cats. Veterinary Record174, (13) 326-326*December 2012 to March 2013, a veterinary practice in Newbury, Berkshire, diagnosed nine cases of M. bovis infection in domestic cats and of 24 in-contact people tested two were found to have an active TB infection, and 2 others had latent infection. The source of the infection was not found. In this outbreak the possibility of raw pet food being a source does not appear to have been considered*

SALMONELLA

1. Brisdon, S. , Galanis, E. , Colindres, R. , et al. (2006) An international outbreak of human salmonellosis associated with animal-derived pet treats - Canada and Washington state, 2005. Canada Communicable Disease Report 32, 150-155
2. Behravesh CB, Ferraro A, Deasy M 3rd, Dato V, Moll M, et al. Salmonella Schwarzengrund Outbreak Investigation Team. Human Salmonella infections linked to contaminated dry dog and cat food, 2006-2008. Pediatrics 2010;3:477-483
3. Canada, H. (2000) Human health risk from exposure to natural dog treats. Canada Communicable Disease Report 26, 41-42
4. Cantor GH, Nelson S Jr, Vanek JA, et al Salmonella shedding in racing sled dogs. J Vet Diagn Invest 1997;9:447-8.
5. Caraway CT, Scott AE, Roberts NC, Hauser GH Salmonellosis in sentry dogs. J Am Vet Med Assoc 1959;135:599-602.
6. CCDR An international outbreak of human Salmonellosis associated with animal-derived pet treats – Canada and Washington State, 2005. Public Health Agency of Canada. CCDR 2006 32, (13)
7. https://abcnews.go.com/Health/90-people-26-states-infected-salmonella-cdc/story?id=56712700&cid=social_twitter_abcn
8. CDC . (2018a) Outbreak of multidrug-resistant Salmonella infections linked to raw turkey product. Centers for Disease Control and Prevention https://www.cdc.gov/salmonella/reading-07-18/index.html.

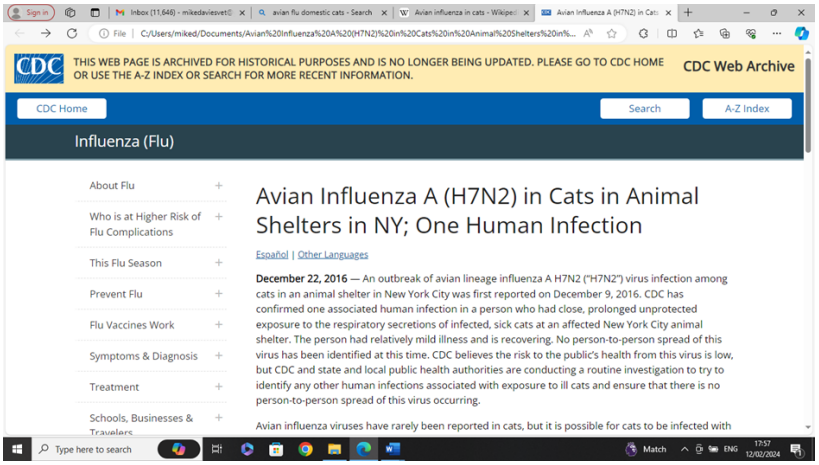
9. Chengappa, M. M. , Staats, J. , Oberst, R. D. , et al. (1993) Prevalence of Salmonella in raw meat used in diets of racing greyhounds. Journal of Veterinary Diagnostic Investigation 5, 372-377
10. Clark, C. , Cunningham, J. , Ahmed, R. , et al. (2001) Characterization of Salmonella associated with pig ear dog treats in Canada. Journal of Clinical Microbiology 39, 3962-3968
11. FDA Recalls of pet foods : https://www.fda.gov/animal-veterinary/safety-health/recalls-withdrawals
12. Finley R, Richard Reid-Smith,and J. Scott Weese Human Health Implications of Salmonella-Contaminated Natural Pet Treats and Raw Pet Food. Clinical Infectious Diseases 2006; 42:686–91
13. Finley R, Ribble C, Aramini J, Vandermeer M, Popa M, Litman M, Reid-Smith R. The risk of salmonellae shedding by dogs fed Salmonella-contaminated commercial raw food diets. Can Vet J. 2007 Jan;48(1):69-75. PMID: 17310625; PMCID: PMC1716752.
14. Finley, R. , Reid-Smith, R. , Ribble, C. , et al. (2008) The occurrence and antimicrobial susceptibility of salmonellae isolated from commercially available canine raw food diets in three Canadian cities. Zoonoses and Public Health 55, 462-469
15. Joffe DJ, Schlesinger DP. Preliminary assessment of the risk of Salmonella infection in dogs fed raw chicken diets. Can Vet J 2002;43:441-2.
16. Leonard, E. K. , Pearl, D. L. , Finley, R. L. , et al. (2011) Evaluation of pet-related management factors and the risk of Salmonella spp. carriage in pet dogs from volunteer households in Ontario (2005-2006). Zoonoses and Public Health 58, 140-149
17. Lefebvre, S. L. , Reid-Smith, R. , Boerlin, P. , et al. (2008) Evaluation of the risks of shedding salmonellae and other potential pathogens by therapy dogs fed raw diets in Ontario and Alberta. Zoonoses and Public Health 55, 470-480
18. MDH . (2018) News release: Salmonella cases linked to raw meat dog food. Minnesota Department of Health. http://www.health.state.mn.us/news/pressrel/2018/salmonella020918.html.
19. Mehlenbacher, S. , Churchill, J. , Olsen, K. E. , et al. (2012) Availability, brands, labelling and Salmonella contamination of raw pet food in the Minneapolis/St. Paul area. Zoonoses and Public Health 59, 513-520
20. https://www.food.gov.uk/news-updates/news/2016/15770/natures-menu-recalls-country-hunter-turkey
21. Morley, P. S. , Strohmeyer, R. A. , Tankson, J. D. , et al. (2006) Evaluation of the association between feeding raw meat and Salmonella enterica infections at a greyhound breeding facility. Journal of the American Veterinary Medical Association 228, 1524-1532

22. Pitout, J. D. D. , Reisbig, M. D. , Mulvey, M. , et al. (2003) Association between handling of pet treats and infection with Salmonella enterica serotype Newport expressing the AmpC ß-lactamase, CMY-2. Journal of Clinical Microbiology 41, 4578-4582
23. Schnirring, L . (2018) Turkey-linked Salmonella outbreak total climbs to 164. CIDRAP News, November 8. http://www.cidrap.umn.edu/news-perspective/2018/11/turkey-linked-salmonella-outbreak-total-climbs-164.
24. Stone GG, Chengappa MM, Oberst RD, et al Application of polymerase chain reaction for the correlation of Salmonella serovars recovered from greyhound feces with their diet. J Vet Diagn Invest 1993;5:378-85.

AVIAN INFLUENZA

H5N1 was first discovered in domestic and wild cats in Asia,[4] specifically in 2003 in the Thai zoo where two tigers and two leopards died. In 2004, the Thai zoo had 147 tigers that died or were euthanized.[5] This was then followed by an outbreak in Germany in 2006, where three stray cats were found to be either dying or dead during the peak time of the virus outbreak.[6] Currently, as of June 2023, there is an ongoing outbreak in Poland with at least 9 confirmed cases and multiple deaths. [7]

1. CDC *Reported outbreak of avian flu in shelter cats. A vet handling one of the cats contracted the infection.*

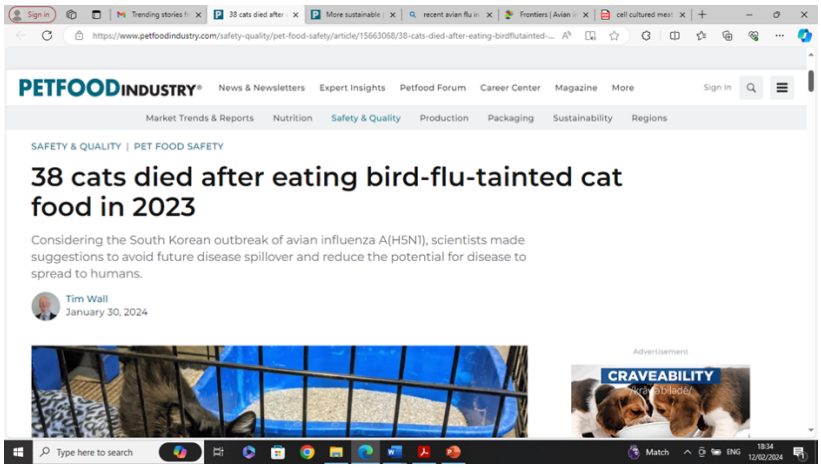


https://archive.cdc.gov/#/details?url=https://www.cdc.gov/flu/spotlights/avian-influenza-cats.htm

2. ECDC REPORT *In this report giving advice to cat owners regarding a recent outbreak of avian flu in cats in Poland the possibility that the cats may have been infected from eating contaminated raw food is not mentioned – even though that is the most documented cause.*

https://www.ecdc.europa.eu/sites/default/files/documents/communicable-disease-threats-report-week-26-2023.pdf

3. Keawcharoen J, Oraveerakul K, Kuiken T, Fouchier RA, Amonsin A, Payungporn S, et al. Avian influenza H5N1 in tigers and leopards. Emerg Infect Dis. 2004;10:2189–91. http://dx.doi.org/10.3201/eid1012.040759
4. Lee K, Lee EK, Lee H, Heo GB, Lee YN, Jung JY, Bae YC, So B, Lee YJ, Choi EJ. Highly Pathogenic Avian Influenza A(H5N6) in Domestic Cats, South Korea. Emerg Infect Dis. 2018 Dec;24(12):2343-2347. doi: 10.3201/eid2412.180290. PMID: 30457524; PMCID: PMC6256404
5. MAFRA. Highly Pathogenic Avian Influenza in Cats, Quarantine Lifted as of August 21st. https://www.mafra.go.kr/home/5109/subview.do?enc=Zm5jdDF8QEB8JTJGYmJzJTJGaG9tZSUyRjc5MiUyRjU2NzI1OCUyRmFydGNsVmlldy5kbyUzRnJnc0VuZGRlU3RyJTNEJTI2YmJzT3BlbldyZFNlcSUzRCUyNnBhZ2UlM0QxJTI2cm93JTNEMTAlMjZwYXNzd29yZCUzRCUyNnJnc0JnbmRlU3RyJTNEJTI2YmJzQ2xTZXElM0QlMjZzcmNoQ29sdW1uJTNEJTI2aXWaWV3TWluZSUzRGZhbHNlJTI2c3JjaFdyZCUzRCUyNg%3D%3D (2023) .
6. MARSCHALL, J; SCHULZ, B; HARDERPRIVDOZ, T; VAHLENKAMPPRIVDOZ, T; HUEBNER, J; HUISINGA, E; HARTMANN, K (1 August 2008). "Prevalence of influenza A H5N1 virus in cats from areas with occurrence of highly pathogenic avian influenza in birds". Journal of Feline Medicine & Surgery. 10 (4): 355–358
7. Petfood Industry report on feline avian flu cases



8. Schnirring, Lisa. "Polish officials probe H5N1 avian flu link to cat deaths". Center for Infectious Disease Research and Policy. University of Minnesota. Retrieved 28 June 2023.
9. Songserm T, Amonsin A, Jam-on R, Sae-Heng N, Meemak N, Pariyothorn N, et al. Avian influenza H5N1 in naturally infected domestic cat. Emerg Infect Dis. 2006;12:681–3. http://dx.doi.org/10.3201/eid1204.051396
10. Starick, E.; Beer, M.; Hoffmann, B.; Staubach, C.; Werner, O.; Globig, A.; Strebelow, G.; Grund, C.; Durban, M.; Conraths, F.J.; Mettenleiter, T.; Harder, T. (1 April 2008). "Phylogenetic analyses of highly pathogenic avian influenza virus isolates from Germany in 2006 and 2007 suggest at least three separate

introductions of H5N1 virus" (PDF). Veterinary Microbiology. 128 (3–4): 243–252. doi:10.1016/j.vetmic.2007.10.012. PMID 18031958
11. Yu Z, Gao X, Wang T, Li Y, Li Y, Xu Y, et al. Fatal H5N6 avian influenza virus infection in a domestic cat and wild birds in China. Sci Rep. 2015;5:10704. http://dx.doi.org/10.1038/srep10704
12. Avian influenza in domestic cats - Poland – 2023
On 28 June 2023, the Chief Veterinary Officer of Poland announced that a total of 16 samples from domestic cats from different cities in Poland have tested positive for A(H5N1) influenza virus.

MULTI-DRUG RESISTANCE

1. Baede, V. O. , Broens, E. M. , Spaninks, M. P. , et al. (2017) Raw pet food as a risk factor for shedding of extended-spectrum beta-lactamase-producing Enterobacteriaceae in household cats. PLoS One 12, e0187239
2. CDC . (2018a) Outbreak of multidrug-resistant Salmonella infections linked to raw turkey product. Centers for Disease Control and Prevention https://www.cdc.gov/salmonella/reading-07-18/index.html
3. Mounsey O, Wareham K, Hammond A, Findlay J, Gould VC, Morley K, Cogan TA, Turner KME, Avison MB, Reyher KK. Evidence that faecal carriage of resistant Escherichia coli by 16-week-old dogs in the United Kingdom is associated with raw feeding. One Health. 2022 Jan 15;14:100370. Doi: 10.1016/j.onehlt.2022.100370. PMID: 35146110; PMCID: PMC8802057.

END

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