



VETERINARY POISONS
INFORMATION SERVICE



Annual Report

2016

The Veterinary Poisons Information Service (VPIS)

The VPIS is a 24-hour telephone emergency service for veterinary professionals and those working for animal welfare organizations providing information on the management of actual and suspected poisoning in animals. In 2016 the VPIS also initiated a pilot study for a service providing triage advice directly to pet owners.

Advice for every consultation is tailored to the specific case in question and can include a risk assessment, information on anticipated clinical effects, a suggested treatment protocol and prognostic advice, with the aim of ensuring the animal receives appropriate and optimum treatment.

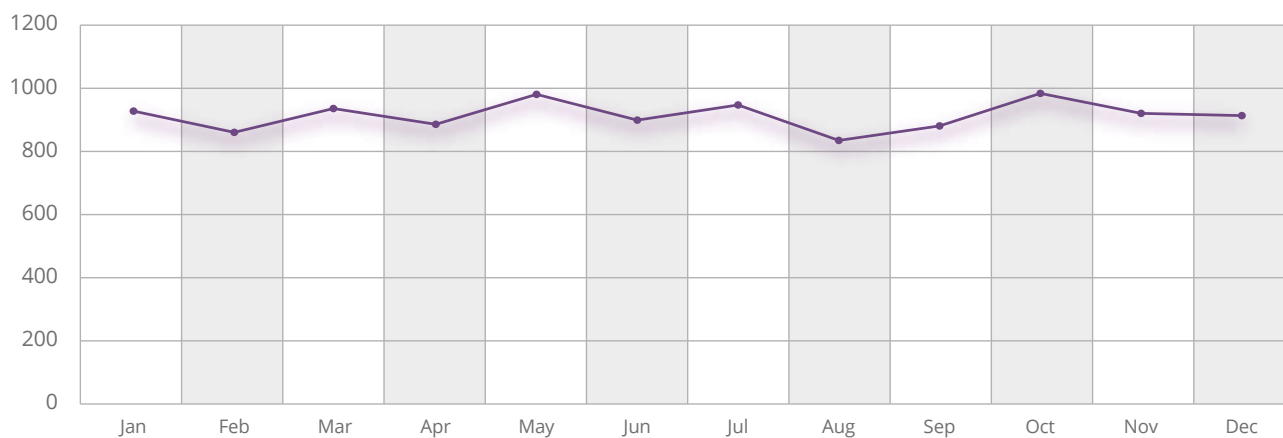
Enquiry load

In 2016 the VPIS received 10,977 enquiries compared to 10,893 in 2015. This included 6 cases reported retrospectively via the online reporting tool, 8 emergency enquiries from overseas (New Zealand, Australia, United Arab Emirates, Ireland, Sweden, Spain and Israel) and 21 enquiries which were information only, non-urgent enquiries. There were 10,956 agent-related enquiries and reports in total.

Monthly enquiry load

The number of enquiries was fairly steady throughout the year (between 837 and 983 per month) and was lowest in February and August.

Figure 1. VPIS enquiries received by month



Enquiries by animal type

The VPIS will answer an enquiry about any animal. In 2016 we received enquiries about 17 different animal types, but dogs predominated (84%) followed by cats (15%) and rabbits (1%).

Figure 2. The percentage of enquiries by animal type

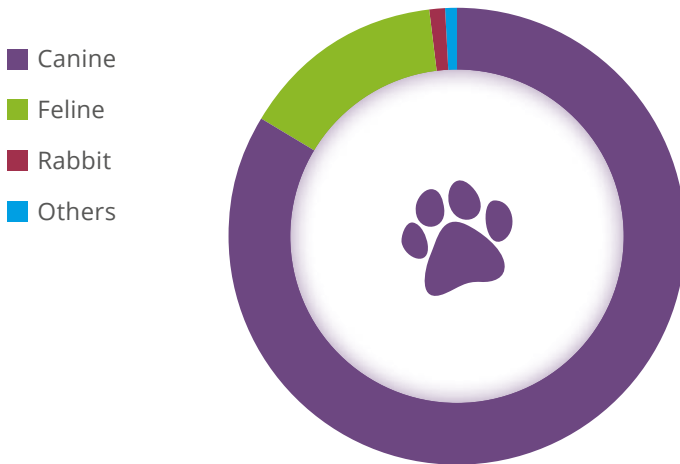


Table 1. The number of enquiries by animal type

Animal	Total (n=10956)	Percentage
Canine	9167	84%
Feline	1599	15%
Rabbit	99	1%
Equine	29	<1%
Rodent	18	<1%
Bird	10	1%
Reptile	7	<1%
Sheep	6	<1%
Ferret	5	<1%
Cattle	5	<1%
Goat	4	<1%
Pig	2	<1%
Skunk	1	<1%
Reindeer	1	<1%
Meerkat	1	<1%
Hedgehog	1	<1%
Coatimundi	1	<1%



Enquiries by agent

The 10,956 enquiries received in 2016 cases involved 15,210 agents. The agents were similar to those in previous years, except that enquiries relating to electronic cigarettes increased again (91 in 2015, 64 in 2014 and 17 in 2013). Enquiries about vitamin D3 have also increased (from 55 in 2015) and this probably reflects increased vitamin D supplementation and therefore availability.

***Important note:** The following five tables (Tables 2-6) and Figure 3 show enquiries about agents, not products, which we are most frequently contacted about. The frequency of enquiry may not necessarily reflect an agent's toxicity but can sometimes be a feature of ready availability and ease of access. Also, an agent may rank highly because it is present in a product containing multiple agents which may vary in toxicity.

Table 2*. Total enquiries received by agent group

Agent group	Total	Percentage of total enquiries (n=10956)
Drugs	6112	40.2%
Plants	1884	12.4%
Household products	1692	11.1%
Pesticides	1526	10.0%
Food	1352	8.9%
Animals	205	1.3%
Cosmetics and toiletries	224	1.5%
Fungi	162	1.1%
Other	2053	13.5%



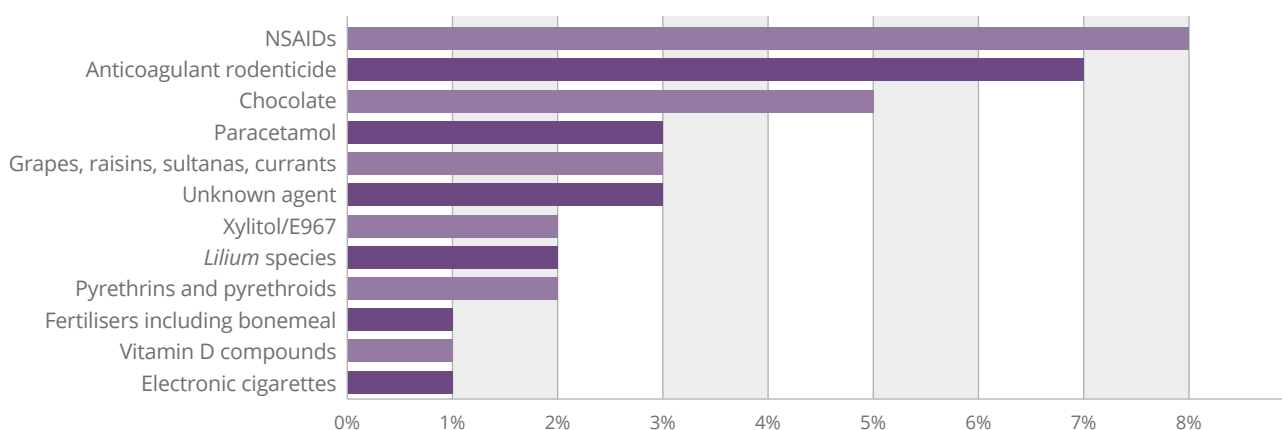
Most common agents

The most common agents the VPIS is contacted about are non-steroidal anti-inflammatory drugs (NSAIDs), anticoagulant rodenticides and chocolate. This is unchanged from previous years and ibuprofen remained the single most common agent (n=433). Enquiries about electronic cigarettes and vitamin D compounds continue to rise.

Table 3*. The most common agents overall

Agent name	Total	Percentage of total enquiries (n=10956)
NSAIDs	879	8.0%
Anticoagulant rodenticides	759	6.9%
Chocolate	579	5.3%
Paracetamol	374	3.4%
Grapes, sultanas, raisins, currants	304	2.8%
Unknown	278	2.5%
Xylitol	253	2.3%
<i>Lilium</i> species	192	1.8%
Pyrethrins and pyrethroids	175	1.6%
Fertilisers including bonemeal	158	1.4%
Vitamin D compounds	148	1.4%
Electronic cigarettes	113	1.0%

Figure 3*. The most common agents as a percentage of the annual total



The most common enquiries in dogs

In dogs ibuprofen remains the top agent (as in previous years), but chocolate enquiries comprised 6.0% of all canine enquiries compared to 5.9% in 2015 and 6.3% in 2014). The anticoagulant rodenticides, bromadiolone and difenacoum, comprised 6.4% compared to 7.0% in 2015 and 2014.

Table 4*. The most common enquiries in dogs

Agent name	Total	Percentage of canine enquiries (n=9167)
Ibuprofen	418	4.6%
Difenacoum	347	3.2%
Paracetamol	322	2.9%
<i>Vitis vinifera</i> (grapes, sultanas, raisins, currants)	280	2.6%
Milk chocolate	257	2.3%
Xylitol	251	2.3%
Bromadiolone	235	2.1%
Chewing gum/ bubble gum	228	2.1%
Unknown	196	1.8%
Chocolate	180	1.6%

The most common enquiries in cats

Lilium species (lily) remains the most common agent in cats (6.0% compared to 6.9% in 2015 and 5.6% in 2014). This was followed by cases where poisoning was suspected but the agent was unknown (4.9% compared to 3.5% in 2015 and 5.0% in 2014).

Table 5*. The most common enquiries in cats

Agent name	Total	Percentage of feline enquiries (n=1599)
<i>Lilium</i> species	96	6.0%
Unknown agent	79	4.9%
Permethrin	61	3.8%
Benzalkonium chloride	57	3.6%
Paracetamol	50	3.1%
Imidacloprid	49	3.1%
Moxidectin	36	2.3%
Ethylene glycol	29	1.8%
Praziquantel	26	1.6%
Disinfectant	25	1.6%

The most common enquiries in rabbits

In rabbits lilies were the most common enquiry in 2016 rather than bromadiolone which was the most the common enquiry in the previous two years.

Table 6*. The most common enquiries in rabbits

Agent name	Total	Percentage of rabbit enquiries (n=99)
<i>Lilium</i> species	10	10.1%
Difenacoum	7	7.1%
Milk chocolate	6	6.1%
<i>Chrysanthemum</i> species	5	5.1%
Meloxicam	5	5.1%



Follow up data of enquiries

There are no national statistics on the cause of death for companion animals and we are not informed about all deaths in animals related to poisoning in the UK. We are also not informed about the outcome of all cases we are consulted about.

We send out postal questionnaires to collect follow up data on the clinical course, treatments given and outcome of a proportion of cases. In 2016, 3,427 follow ups were sent (31% of cases). Follow up and outcome data were available for 1,513 cases (44% of follow ups sent) in 2016.

In over half the cases where follow up information was received the animal made a full recovery and almost a quarter of the animals remained asymptomatic. A fatal outcome was recorded in 7.7% of cases (4.0% euthanized and 3.7% died). Note that in some cases euthanasia may be an outcome due to financial constraints on the owner and not solely due to poisoning, although a poor prognosis and significant adverse effects are likely to influence such a course of action.

Table 7. The outcome in cases with returned follow up

Outcome	Total	Percentage (n=1513)
Full recovery	871	57.6%
Fine throughout	357	23.6%
Euthanized	60	4.0%
Died	56	3.7%
Not known	36	2.4%
Unrelated to exposure	32	2.1%
Full recovery (query related)	26	1.7%
Did not present	15	1.0%
Euthanized (unrelated)	13	0.9%
Died (unrelated)	9	0.6%
Ongoing	8	0.5%
Euthanized (query related)	7	0.5%
Improving but ongoing	5	0.3%
Query related	6	0.4%
Died (query related)	5	0.3%
Not applicable	4	0.3%
Not known (referred)	3	0.2%
Grand total	1513	-



Cases with known outcome

Cases with a fatal outcome – dogs

In dogs there was a fatal outcome in 71 cases (which were thought to be due to poisoning). Of these 36 dogs died and 35 were euthanized. Poisoning with an unknown agent was suspected as the most common cause of a fatal outcome, followed by metaldehyde and ethylene glycol antifreeze. Dermatological creams for humans were involved in five cases (calcipotriol, calcitriol, 5-fluorouracil). There were four fatal cases involving non-steroidal anti-inflammatory drugs (NSAIDs), three with naproxen and one with ibuprofen.

Table 8. Canine cases with a returned follow up and a fatal outcome

Agent	Died	Euthanized	Agent	Died	Euthanized
Unknown agent	4	5	Naproxen	1	2
Metaldehyde	3	2	<i>Narcissus</i> species (daffodil)	1	
<i>Beta vulgaris</i> ssp. <i>vulgaris</i> convar. <i>vulgaris</i> var. <i>Altissima</i> (sugar beet)	2		New psychoactive substance (QUCHIC/BB-22)	1	
Smoke	2		Raspberry ketone and caffeine	1	
5-Fluorouracil	1	1	Tramadol and diazepam and baclofen	1	
Anticoagulant rodenticide nk	1		5-Hydroxytryptophan (5-HTP)		1
<i>Atropa belladonna</i> (deadly nightshade)	1		Baclofen		1
Baby wipes	1		Bleach		1
Blue green algae	1		Dark chocolate		1
Brodifacoum	1		Didecyldimethyl ammonium chloride (DDAC)		1
Calcipotriol	1	1	<i>Entoloma sericellum</i>		1
Calcitriol	1		Ethylene glycol		4
Dexamfetamine/ dexamphetamine	1		Ibuprofen		1
Difenacoum	1		Insulin		1
Drinking chocolate	1		Lasalocid		1
Fenbendazole	1		Metronidazole		1
Glyceryl trinitrate or metoprolol or lacidipine or indometacin	1		Nefopam		1
Ham bone*	1		Phenylbutazone		1
<i>Heracleum sphondylium</i>	1		<i>Prunus armeniaca</i> (apricot)		1
Ibuprofen and amisulpride and trihexyphenidyl and clozapine	1		Terbutaline		1
<i>Inocybe</i> species, probably <i>I. rimosa</i>	1		Tremorgenic mycotoxins		2
Lamotrigine	1		<i>Tulipa</i> species		1
<i>Malus sylvestris</i> (crab apple)	1		<i>Vipera berus</i> (adder)		1
Morphine	1		Wheat heat pad		1
			Xylitol		1
			Total	36	35

* Not a toxicological cause of death

Cases with a fatal outcome – cats

In cats there was a fatal outcome in 33 cases (which were thought to be due to poisoning). Of these, 9 cats died and 24 were euthanized. The most common agent involved in these cases was ethylene glycol which accounted for 33% of fatalities. This is lower than in previous years. Note that in veterinary toxicology ethylene glycol exposure is rarely confirmed with laboratory analysis. Other common agents in fatal feline cases were permethrin and suspected poisoning with an unknown agent.

Table 9. Feline cases with a returned follow up and a fatal outcome

Agent	Died	Euthanized
Ethylene glycol	2	9
Unknown agent	3	4
Paracetamol		2
Permethrin		2
Permethrin and imidacloprid		1
Permethrin and fipronil		1
Permethrin and indoxacarb		1
Permethrin and tetramethrin and methoprene		1
Diatomaceous earth	1	
Neem oil (margosa oil) and citronella	1	1
Moxidectin and imidacloprid	1	
Milbemycin and praziquantel	1	
<i>Lilium</i> species		1
Henna		1
Total	9	24

Table 10. Fatal cases in other animals with returned follow up

Animal	Agent	Died	Euthanized
Turkey	Rodenticide nk	1	
Red crowned parakeet	<i>Helleborus</i> species	1	
Bantam	Bromadiolone	1	
Pig	Anticoagulant rodenticide nk	1	
Sheep	<i>Helleborus</i> species	1	
Sheep	Cypermethrin	1	
Sheep	<i>Cannabis sativa</i> (hemp)	Multiple lambs died	
Rabbit	Clematis species	1	
Rabbit	<i>Prunus laurocerusus</i> (cherry laurel)	1	
Rabbit	Bupivacaine (parenteral overdose)	1	
Donkey	<i>Taxus baccata</i> (yew)	1	
Ferret	Ibuprofen		1



Public access service

A helpline for pet owners was launched on the 5 September 2016. This was a pilot service operating 9-5 pm weekdays. Once case details are obtained Information Scientists then either reassure the owner that adverse effects are unlikely or advise the owner to take their pet to their veterinary practice for treatment, either immediately or if signs develop.

There were 36 enquiries received directly from owners in 2016, 20 of these after September 5. In four cases there was a subsequent telephone enquiry from a veterinary professional after the owner had taken their pet to the surgery.

Jerky Treats

Fanconi syndrome associated with the consumption of jerky treats has been reported in pets in the US, Canada and Australia, with a few cases reported in the UK. Numerous products have been implicated but the cause remains unknown.

A case register for reporting cases of adverse effects associated with ingestion of jerky treats was established in 2016 in order to obtain a fuller picture of the situation in the UK.

<https://vpisglobal.com/poisons/jerky-treats-case-registry/>

In total 22 complete cases have been reported, all involved dogs of various breeds. A number of different jerky treat brands were involved and the treats originated from various countries, but most commonly China (59%), although the ultimate origin of the remainder is uncertain.

Table 11. Characteristics of the cases reported on the jerky treat register

Characteristic	Number of dogs (n=22)
Age	15 months to 14 years (average 7 years)
Weight	3 to 24.65 kg, average 12 kg
Sex	Males 7 (4 entire, 2 neutered, 1 unknown) Females 15 (12 spayed, 3 entire)
Breeds	Afghan, beagle, border collie, dachshund, miniature dachshund (n=2), greyhound, Irish setter, Jack Russell, Labrador, lhasa apso, Maltese terrier cross, mini Lakeland terrier, Patterdale cross, poodle (n=3), terrier cross, West Highland white terrier, whippet (n=2), Yorkshire terrier
Jerky content	Chicken (n=13), duck (n=13), beef (n=3), sweet potato (n=2), vegetable (n=1) Note some cases involved more than one type of treat.
Origin of treats	China (n=13), Belgium (n=1), Czech Republic (n=1), Germany (n=2), Netherlands (n=1), unknown (n=6)
Brands	Digby (n=5), unknown (n=4), Web box (n=2), Reward Deli Delights (n=2), Whimzees (n=1), Tesco (n=1), Trixie premio (n=1), Jollyes Chicken Medallions (n=1), Loose Hide Dog chews (n=1), Perrito (n=1), Wagtastic (n=1), Hi-Life (n=1)
Shop purchased from	Unknown (n=8), B&M Bargains (n=5), Pets at Home (n=4), Jollyes Petfood Superstores (n=2), Pound Stretchers (n=1), local pet shop (n=1), Tesco (n=1)
Frequency of ingestion	Twice daily (n=4), once daily (n=4), daily (n=10), sporadic (n=2), once or twice weekly (n=2)
Approximate proportion of diet	4-98% 4% (n=1), 5% (n=4), <10% (n=5), 10% (n=3), 15% (n=1), 20% (n=1), 25% (n=2), 50% (n=1), 98% (n=1), unknown (n=3).

Table 12: Clinical signs, biochemical findings and treatments reported on the jerky treat cases

Clinical signs	Number of dogs (n=22)
Polyuria	21
Lethargy	13
Inappetence	10
Vomiting	6
Weight loss	5
Dehydration	4
Weakness	5
Polydipsia	4
Urinary incontinence/urinating in house	2
Biochemistry	
Hypoglycaemia	1
Hypokalaemia	3
Hypophosphataemia	3
Hyponatraemia	0
Hyperchloraemia	0
Acidosis	0
Elevated urea	6
Elevated creatinine	2
Elevated ALT	3
Urine results	
Proteinuria	15
Ketonuria	3
Glucosuria	18
Urine pH high	2
USG raised	0
Urine culture positive	1
Severe amino aciduria	2
Bilirubinuria	2
Haematuria	1
Treatment	
Withdrawal of treats	16
IV fluids	5
IV glucose	1
Alkalinizing agents	0
Intravenous potassium	1
Oral electrolytes	3
Amino acid supplements	0
Antibiotic	6

Table 13: Outcome in 22 jerky treats cases reported on the jerky treat case register

Outcome	Number of dogs
Full recovery	11
Ongoing	9
Euthanized due to financial constraints	1
Euthanized due to disease progression	1

Adverse effects from ingestion of jerky treats is an issue in the UK but only a few cases are reported. A number of products have been implicated and in about half the cases the treats have made up 10% or less of the dog's diet. Dogs can recover but prolonged monitoring and treatment may be required.



Fungi

The VPIS works with the Fungus Conservation Trust and continues to collect data on clinical signs and outcome of cases of mushroom ingestion in animals where the mushroom has been identified by a mycologist. This also allows the VPIS to provide specific case advice in the management of poisoning with fungi. Outcome data were available for 20 canine cases where the fungus has been identified. Fungi from a total of 16 different genera were identified. Seven dogs remained asymptomatic and four developed only gastrointestinal signs. There were two fatal cases, one involving *Entoloma* species (probably *Entoloma sericellum*) and the other *Inocybe* species (probably *Inocybe rimosa*).

Table 14: Summary of canine cases involving fungus ingestion with expert identification of the fungus involved and known outcome

VPIS case number	Breed	Identification	Sample or image	Clinical signs	Outcome
219582	Labrador	<i>Amanita muscaria</i>	Image	Severe vomiting at 30 minutes (for 6 hours), moderate ataxia at 1.5 hours (for 8 hours) and dilated pupils.	Recovered in 18 hours
216532	Cavashon	<i>Amanita rubescens</i>	Image	Asymptomatic	Fine throughout
216094	Not stated	<i>Bolbitius lacteus</i>	Image	Asymptomatic	Fine throughout
219732	Labrador	<i>Clitocybe rivulosa</i>	Image and sample	Vomiting, diarrhoea, twitching, pupils dilated then constricted and hypersalivation.	Full recovery
217536	French bulldog	<i>Coprinopsis</i> or <i>Coprinellus</i> species, possibly <i>Coprinopsis lagopus</i>	Image	Elevated liver enzymes and hepatic failure.	Full recovery
218149	Golden retriever	<i>Coprinopsis</i> species	Image	Asymptomatic	Fine throughout
219078	Beagle	<i>Entoloma chalybaeum</i>	image	Moderate vomiting, mild ataxia, severe hypersalivation, severe disorientation and severe watery diarrhoea.	Recovered in 5 hours
216366	Pug	<i>Entoloma</i> species	Questionnaire only	Vomiting, diarrhoea and disorientation within 1 hour.	Full recovery
220533	Cavalier King Charles Spaniel	<i>Entoloma</i> species probably <i>Entoloma sericellum</i>	Image and sample	Sudden collapse and hypersalivation. Severe bradycardia, severe diarrhoea, mild retching, severe hypersalivation, severe collapse and hyperglycaemia. Then haemorrhagic diarrhoea, hypoglycaemia and pancreatitis.	Euthanized at 24 hours
220133	German short-haired pointer	<i>Hebeloma crustuliniforme</i>	Image and sample	Severe vomiting and diarrhoea.	Full recovery in 6 hours

VPIS case number	Breed	Identification	Sample or image	Clinical signs	Outcome
217287	Norwegian elkhound	<i>Hygrocybe</i> species, <i>Russula cyanoxantha</i>	Image	Collapse, bradycardia, tachypnoea, dull, pale mucous membranes, panting, drowsiness, elevated liver enzymes, leucopenia, thrombocytopenia and elevated urea.	Full recovery (but cause of signs suspected to be something else)
218241	Pug	<i>Inocybe</i> species probably <i>I. rimosa</i>	Image	Vomiting, diarrhoea, unresponsive with shallow breathing, weak and unresponsive, pale mucous membranes, collapse, tachycardia and haemorrhagic diarrhoea, hypothermia. Then bradycardia (20-40 bpm) and continuous bloody diarrhoea followed by severe collapse, laboured breathing and hypothermia.	Died at 13 hours
218586	Bloodhound	<i>Lycoperdon</i> species and slime mould (<i>Ceratiomyxa fruticulosa</i>)	Image and sample	Asymptomatic	Fine throughout
215834	Cavalier King Charles Spaniel	<i>Panaeolus</i> species	Image	Asymptomatic	Fine throughout
215831	Chihuahua	<i>Panaeolus</i> species	Image	Vomiting for 24 hours.	Full recovery
221322	Labrador	<i>Paxillus</i> species, possibly <i>P. rubicundulus</i>	Image	Inappetence, lethargy, recumbent, vomiting, rigidity, strabismus, bloody stools, hyperglycaemia, raised ALT and opisthotonus. Became unwell more than 24 hours after possible ingestion.	Recovered in 6 days
216045	Jack Russell terrier	<i>Psathyrella sarcocephala</i>	Image	Asymptomatic	Fine throughout
218698	Cavashon	<i>Rugosomyces carneus</i>	Image	Asymptomatic	Fine throughout
221682	Miniature schnauzer	<i>Russula emetica</i> or <i>Russula nobilis</i> , <i>Mycena</i> species	Image	Vomiting for 3 hours and anorexia.	Full recovery
219037	Border collie	<i>Russula</i> species	Image	Hypersalivation.	Recovered in 3 hours

Education, outreach and collaborations

VPIS ran nine Continuing Professional Development (CPD) events over the year in London, Birmingham, York, Bristol, Norwich and Manchester. We also lectured at the Royal Veterinary College (RVC), University of Liverpool and Rowe Veterinary Group.

We gave a radio interview on 23 March on BBC Local Radio (Mark Forrest show) about human foods in dogs.

VPIS produced two editions of the newsletter Toxic Times and 12 monthly electronic newsletters.

VPIS exhibited at the British Small Animal Veterinary Association (BSAVA) Congress in Birmingham, 7-10 April. We exhibited and lectured at the London Vet

Show, 17-18 November. We attended and submitted 8 posters to the 36th International Congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) 24-27 May 2016, Madrid.

We submitted data on exposure in animals to the European Chemicals Agency (ECHA) during a public consultation on anticoagulant rodenticides.

We worked in collaboration with International Cat Care, the Royal Botanic Gardens, Kew, the Fungus Conservation Trust, and the Royal Society for the Protection of Animals (RSPCA).

By the end of the year the VPIS had 3345 likes on Facebook and 126 followers on Twitter.

Acknowledgments

The VPIS would like to thank everyone who takes the time to complete and return our follow up questionnaires. This information is essential to maintaining the VPIS case database which informs advice given in future cases. It also enables the VPIS to perform toxicovigilance, an essential role of poisons centres, by collecting and analysing case data and monitoring trends in animal poisoning the UK.



Publications from the VPIS in 2016

- Ellison J. 2016 Possible poisonings of unknown origin – an approach. *Veterinary Practice Today* 4(1):22-24.
- Ellison J. 2016 Anti-diabetic drugs in dogs and cats. *Veterinary Practice Today* 4(2):26-29.
- Ellison J. 2016 Dangers of dietary supplements. *Veterinary Practice Today* 4(3):24-26.
- Ellison J. 2016 Household hazards - the garage and garden shed. *Veterinary Practice Today* 4(4):21-23.
- Ellison J. 2016 Household hazards – the ground floor. *Veterinary Practice Today* 4(5):31-33.
- Ellison J. 2016 Household hazards – bath, bed and beyond. *Veterinary Practice Today* 4(6):31-33.
- Ellison J. 2016 Your spring survival guide. *Pet Focus* Spring pp12-13.
- Ellison J. 2016 Perils of the picnic. *Pet Focus* Summer pp12-13.
- Ellison J. 2016 Household hazards part one: The ground floor. *Pet Focus* Autumn pp12-13
- Ellison J. 2016 Household hazards part two: The hazards that lurk...Upstairs. *Pet Focus* Winter pp12-13.
- Bates N. 2016 Palm oil ingestion in dogs. *Veterinary Record* 178:101.
- Bates N. 2016 Paracetamol (acetaminophen) poisoning in cats. *Feline Focus* 2(2):27-33.
- Bates N. 2016 Ethylene glycol poisoning. *Companion Animal* 21(2):95-99.
- Bates N, Edwards N. 2016 Oven cleaner exposure in pets [abstract]. *Clinical Toxicology* 54(4):513-514.
- Kazemi-Egbunike L, Bates N 2016 Sodium hypochlorite bleach exposure in dogs [abstract]. *Clinical Toxicology* 54(4):514.
- Blackett T, Bates N. 2016 A retrospective study of household battery exposure in 271 dogs [abstract]. *Clinical Toxicology* 54(4):514.
- Edwards N, Bates N. 2016 Can fastidiousness kill the cat? Detergent exposure in cats: a common cause of respiratory effects [abstract]. *Clinical Toxicology* 54(4):515-516.
- Crouchley J, Bates N. 2016 Salbutamol exposure in dogs [abstract]. *Clinical Toxicology* 54(4):517.
- Rawson-Harris P, Bates N. 2016 Venlafaxine overdose in dogs: what are the risk factors associated with clinical signs? [abstract]. *Clinical Toxicology* 54(4):517-518.
- Ludden K, Rawson-Harris P, Chang Y-M, Garden O, Bates N, Edwards N. 2016 Ethylene glycol poisoning in cats: what are the prognostic indicators? [abstract]. *Clinical Toxicology* 54(4):518.
- Matumo S, Bates N. 2016 Oral exposure to fentanyl transdermal patches in dogs [abstract]. *Clinical Toxicology* 54(4):518.
- Bates N. 2016 Lily poisoning. *Companion Animal* 21(4):238-241.
- Sparkes A, Bessant C, Bates N. 2016 Permethrin risk to cats. *Veterinary Record* (19):480.
- Bates N, Sharman M, Lam, A, Kent A, Walker D, Smith V, Carmichael N. 2016 Reporting cases of Fanconi syndrome in dogs in the UK. *Veterinary Record* 178:510.
- Bates N, Sharman M, Lam, A, Kent A, Walker D, Smith V, Carmichael N. 2016 Registry to collect cases of jerky-related illness. *Veterinary Times* 46(21):38.
- Bates N. 2016 Detergent exposure: decontamination is key. *Feline Focus* 2(6):181-185.
- Bates N. 2016 Ibuprofen toxicosis. *Companion Animal* 21(6):346-350.
- Bates N, Edwards N. 2016 Monensin toxicity in dogs. *Veterinary Record* 178:638-639.
- Bates N, Edwards N. 2016 Lipid infusion in the management of poisoning. *Veterinary Record* 179:22.
- Bates N, Edwards N. 2016 Ensure antivenom access in adder areas. *Veterinary Times* 46(29):31.
- Bates N. 2016 Anticoagulant rodenticide toxicosis. *Companion Animal* 21(8):466-471.
- Bates N. 2016 Risks from exposure to petroleum distillates in pets. *Companion Animal* 21(12):706-711.

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