Animal &
Plant Health
Agency

Zoonoses and Veterinary Public Health

Quarterly report Q2 – April to June 2024

Project FZ2100

Published: September 2024

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APHA is an Executive Agency of the Department for Environment, Food and Rural Affairs and also works on behalf of the Scottish Government, Welsh Government and Food Standards Agency to safeguard animal and plant health for the benefit of people, the environment and the economy.

Contents

Background

Monitoring the occurrence of certain animal diseases can highlight the potential for zoonotic transmission and provide an indication of human, environmental, and foodborne health risks. These Zoonoses and Veterinary Public Health quarterly reports summarise the surveillance activities of the Animal and Plant Health Agency (APHA), APHA partner postmortem providers and Scotland's Rural College (SRUC) Veterinary Services, for zoonoses and infections shared between humans and animals in Great Britain. Data (which primarily relates to farmed animal species) gathered by the network of Veterinary Investigation Centres is used for the production of these quarterly report summaries. Quantitative diagnostic data for all of Great Britain is provided by the Veterinary Investigation Diagnosis Analysis (VIDA) surveillance system. Summaries of veterinary public health investigations into incidents and outbreaks of zoonotic disease and associated activities are also included. This report covers the relevant VIDA data and zoonoses investigations for the second quarter, April to June 2024 (Q2 2024).

The Zoonoses and Veterinary Public Health project (designated the FZ2100 project) is funded by Defra, the Scottish Government and the Welsh Government through the APHA's Bacterial Diseases and Food Safety portfolio. The FZ2100 project also uses returns from scanning surveillance projects.

This report provides information about non-statutory zoonoses, as well as *Coxiella burnetii* (Q fever), avian chlamydiosis (in psittacines), and brucellosis in dogs, which were made reportable in Great Britain in 2021. The detection of *C. burnetii* and brucellosis in dogs were made reportable through amendments to the Zoonoses Order (2021). The Psittacosis (Ornithosis) Order is the legislation that covers avian chlamydiosis. Non-statutory zoonoses are defined as any zoonoses for which no specific animal-health derived legislation exists, and so excludes *Salmonella* and those diseases which are compulsorily notifiable in specified animal species, for example, tuberculosis (TB), which is notifiable in all mammals. Information concerning notifiable and other reportable zoonoses is recorded elsewhere, some under specific projects such as FZ2000 (*Salmonella*).

1. General scanning surveillance

1.1 Zoonoses VIDA data for Great Britain: April to June 2024

Table 1 (collated 5 August 2024) summarises general scanning surveillance VIDA data for clinical diagnoses of potential zoonotic organisms that may be shared between animals and humans from specimens submitted to APHA, APHA partner postmortem providers and SRUC Veterinary Investigation Centres for the 3-month period between April and June 2024. The table also compares the latest findings with the data for Q2 for the preceding 2 years, 2023 and 2022. It includes rare zoonotic infections and those for which zoonotic potential is confined predominantly to immunocompromised individuals. Diagnoses use strict criteria and are recorded, once per incident, using the VIDA system. The list is

subject to selection, submission, and testing bias. It is not definitive and excludes notifiable and most reportable diseases, notably salmonellosis, which is recorded elsewhere.

Table 1. General scanning surveillance: Zoonoses VIDA data for Great Britain, April to June 2024 – all species

Table notes:

- species columns are: Cattle; Sheep; Goats; Pigs; Birds; Misc. which includes miscellaneous and exotic farmed species; and Wildlife
- '-' in a cell indicates that a diagnosis is not available for that species
- birds: data for birds includes domestic and wild birds
- wildlife: data for wildlife includes mammals only

VIDA codes	Diagnosis	Q2 2022	Q2 2023	Q2 2024	Cattle	Sheep	Goats	Pigs	Birds	Misc.	Wildlife
311	Babesiasis	8	11	7	7	-	-	-	-	-	-
258, 659	*Brachyspira pilosicoli* (intestinal spirochaetosis)	14	19	29	-	-	-	29	0	-	-
013	*Campylobacter* fetopathy	6	17	11	2	9	0	-	-	0	0
282	Chlamydiosis (*C. psittaci*)	1	0	0	-	-	-	-	0	-	-
014	*Chlamydia abortus* fetopathy	28	32	28	0	28	0	-	-	0	0
732	*Corynebacterium pseudotuberculosis* (CLA)	9	5	8	-	4	4	-	-	-	-
318	Cryptosporidiosis	70	80	65	58	6	0	1	0	0	0
362	Cysticercosis	1	0	2	-	1	1	-	-	-	-
193	*Dermatophilus* infection	1	2	0	0	0	0	-	-	0	0
022, 133, 615	Erysipelas	5	3	9	-	0	0	7	2	0	-
371, 372, 373	Fasciolosis	31	41	24	16	3	1	-	-	4	0
363	Hydatidosis	0	0	0	-	0	-	-	-	-	-

VIDA codes	Diagnosis	Q2 2022	Q2 2023	Q2 2024	Cattle	Sheep	Goats	Pigs	Birds	Misc.	Wildlife
015, 136, 139	Leptospirosis (all categories)	1	3	3	0	0	0	1	-	0	2
016, 140, 150, 189, 711	Listeriosis (all categories)	26	38	40	11	24	4	0	0	0	1
217	Louping ill	13	7	10	0	9	-	-	1	0	-
225	Orf (parapox virus)	7	9	7	-	7	0	-	-	0	-
152,153, 157, 158	*Pasteurella multocida* pneumonia (pasteurellosis)	44	78	70	42	20	1	5	2	0	0
223	Pseudocowpox (parapox virus)	0	0	0	0	-	-	-	-	-	-
027, 262	Q Fever (*Coxiella burnetii)*	0	3	3	3	0	0	-	-	0	0
374	Red Mite *(Dermanyssus gallinae)*	0	3	0	-	-	-	-	0	-	-
195	Ringworm	0	2	1	0	1	0	0	0	0	0
379, 392	*Sarcoptes scabei* infection	0	1	0	0	-	0	0	-	0	-
024, 171, 172, 644	Streptococcal infection (excluding bovine mastitis)	25	31	33	0	4	1	27	0	0	1
745	Swine influenza	8	9	12	-	-	-	12	-	-	-
026, 315	Toxoplasmosis, including fetopathy	24	56	28	-	28	0	-	-	0	0
142	Tuberculosis, excluding bovine *M. bovis*	3	5	3	-	0	0	0	3	0	0
034, 154	Yersiniasis (including fetopathy*)*	3	3	6	2	1	0	3	0	0	0

The table is intended only as a general guide for veterinary and public health professionals to the diagnosed occurrence of animal-associated infections in predominantly farmed animal species in Great Britain.

Common minor diseases of zoonotic importance, such as orf and ringworm, are grossly underestimated by the VIDA recording and reporting system, as it is unusual for practising veterinary surgeons to submit material for diagnosis.

See more specific information on scanning surveillance diagnoses and trends for endemic diseases on the APHA Vet Gateway website.

1.2 Highlights from APHA and SRUC disease surveillance centres

This section provides information on a few noteworthy findings of zoonotic interest from material submitted to the APHA (England and Wales), APHA partner postmortem providers and SRUC Veterinary Services (Scotland) during April to June 2024.

Further information is provided in the quarterly reports by the APHA species groups and the monthly surveillance reports in the Vet Record derived from scanning surveillance, which can be found on the APHA VET Gateway website.

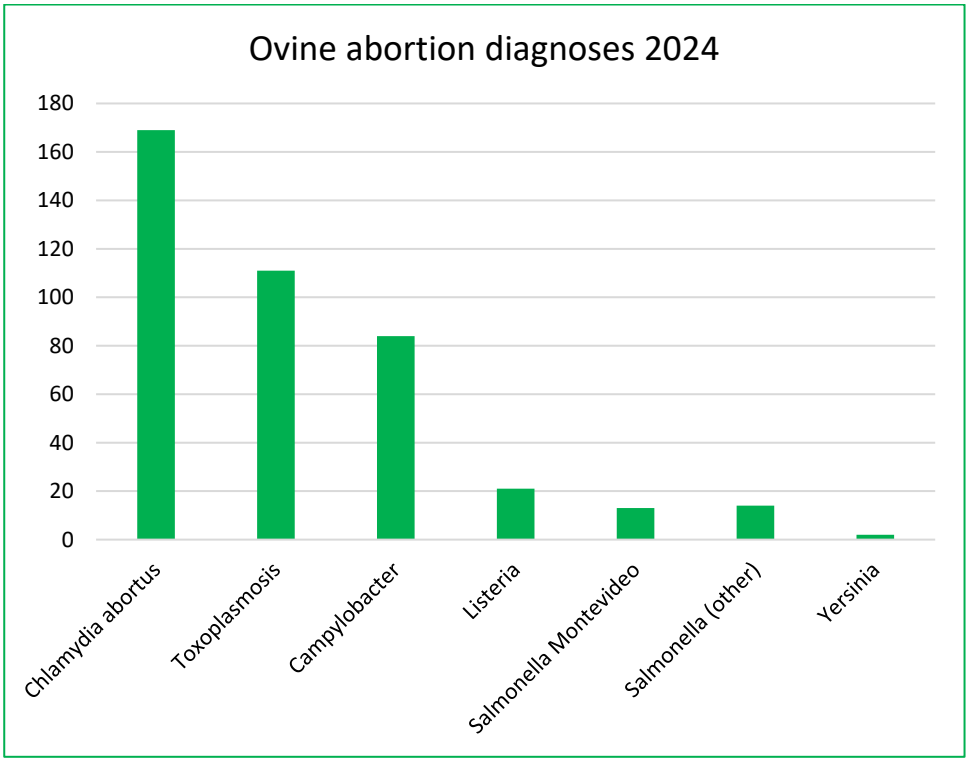
The species expert group quarterly reports provide comprehensive details on scanning surveillance activities, covering avian, cattle, small ruminant, pigs, miscellaneous and exotic farmed species, and wildlife.

Update of January to June 2024 ovine abortion diagnoses

Ovine abortion investigations for the 2024 lambing season were performed by APHA, APHA partner postmortem providers, and SRUC Veterinary Services between January and June 2024, with February and March being the busiest months. Veterinary Investigation Officers (VIOs) provide zoonoses advice to private veterinary surgeons to pass on to their farm clients when potentially zoonotic organisms are identified. Potentially zoonotic organisms that may be detected during ovine abortion investigations include *Chlamydia abortus*, *Toxoplasma gondii*, *Campylobacter* sp., *Listeria* sp., *Salmonella* sp., *Yersinia* sp. and *Coxiella burnetii.* Figure 1 comprises a chart which includes the most common ovine abortion diagnoses for 2024.

Figure 1: Number of ovine abortion diagnoses January to June 2024

- The data is for the period January to June 2024
- The majority of the investigations took place in February to April inclusive
- The most common causes of ovine abortion are listed



For the 2024 lambing season, illustrated in the above chart, there were abortion diagnoses as follows: 169 *Chlamydia abortus* (ovine enzootic abortion), 111 Toxoplasmosis, 84 *Campylobacter* sp., 21 *Listeria* sp., 13 *Salmonella* Montevideo, 14 other *Salmonella* sp. and 2 *Yersinia* sp. Most years the three commonest causes of ovine abortion in Great Britain are *C. abortus*, *Toxoplasma gondii*, and *Campylobacter* sp. (predominantly *C. fetus fetus* or *C. jejuni*). Usually we find *C. abortus* and *T. gondii* are the most common causes of ovine abortion followed by *Campylobacter*. In Great Britain there are vaccines available for protection against *C. abortus* and Toxoplasmosis, although there have been reported issues with the supply of some sheep vaccines.

This year, for the period January to June 2024, there were also 260 diagnoses of Schmallenberg virus (SBV) infection. These are usually submissions for the investigation of full-term and premature stillborn deformed offspring. Thus not all SBV infections involve abortions. SBV does not cause zoonotic infection.

In addition to the zoonotic advice provided by VIOs, advice on the risks of infections that can be transmitted via contact between pregnant women and parturient / post-parturient animals is provided on the GOV.UK website: Pregnancy: advice on contact with animals that are giving birth. Public Health Wales have issued similar guidance: Advice issued to pregnant women during lambing season - Public Health Wales (nhs.wales)

Detection of ticks on carcases

In the Q1 2024 quarterly report it was reported that APHA and our partner postmortem providers detected ticks on livestock throughout the winter months. The unseasonably warmer weather may have contributed to increased tick activity earlier in the year than expected.

Changing climatic factors may result in an increase in the months of the year when ticks are detected. This, and the expanding geographical distribution of ticks on livestock in Great Britain may lead to the emergence of tick-transmitted diseases in geographical regions where such diseases have not previously been present.

Vector-borne diseases are of interest, as many are zoonotic. In April 2023 the Human Animal Infections and Risk Surveillance (HAIRS) group published an updated risk assessment for tick-borne encephalitis (TBE), which is a viral infection that can cause a meningitis-like illness in humans. The TBE virus (TBEV) can also cause disease in animals and prior to 2019, TBEV had not been found in the UK. Further information is available at: https://www.gov.uk/government/publications/hairs-risk-assessment-tick-borne-encephalitis/hairs-risk-assessment-tick-borne-encephalitis#:~:text=on%20GOV.UK.-,Summary,also%20cause%20disease%20in%20animals.

2. Specific scanning and targeted surveillance and other studies

2.1 Campylobacter

Human campylobacteriosis is usually caused by the thermophilic *Campylobacter* species *C. jejuni* and *C. coli*, which can be found in a wide range of livestock, poultry and wildlife species. Poultry and poultry meat products are the main sources for human infection, and campylobacteriosis is the most commonly reported bacterial cause of food poisoning. The United Kingdom Food Security Report 2021 indicated that there were 54,979 laboratory-confirmed infections in 2020, 68,006 in 2019, and 67,984 in 2018. Note, there may have been an impact of the COVID-19 pandemic on the 2020 figures.

This Zoonoses and Veterinary Public Health report does not cover foodborne illness related to *Campylobacter* infection. However, non-thermophilic *Campylobacter* strains (such as *C. fetus*) can also, rarely, cause severe systemic illness in people. Only *Campylobacter* fetopathy numbers are detailed in Table 1 above.

England and Wales

During Q2 2024 two *Campylobacter* isolates were identified by the APHA Starcross laboratory. Both isolates (1 *C. fetus fetus*, and 1 *C. jejuni)* were from sheep abortions.

Scotland

SRUC Veterinary Services had a total of 37 *Campylobacter* isolates during Q2 2024 which were:

- Bovine – one isolate which was *C. fetus venerealis intermedius.*
- Ovine – a total of 9 isolates: 8 *C. fetus* not-typed, and 1 non-typed *Campylobacter* sp.
- Canine – a total of 24 isolates: 5 *C. upsaliensis,* 16 *C. jejuni,* 2 *C. lari*, and 1 non-typed *Campylobacter* sp.
- Feline – two isolates, both *C. jejuni.*
- Zoo animals - one isolate which was *C. coli* detected in a sample from a chimpanzee.

2.2 Leptospirosis

Targeted surveillance by APHA for leptospirosis is variously achieved by analysis of results from:

1. RT(real-time) polymerase chain reaction (PCR) for pathogenic leptospires on appropriate diagnostic samples.

2. Microscopic agglutination test (MAT) antibody testing on sera submitted for disease diagnosis; or for monitoring and export (mainly dogs). Diagnostic MAT titres are considered seropositive at 1/100 or above (1/50 for *L.* Hardjo bovis in cattle).

3. Milk antibody testing by enzyme-linked immunosorbent assay (ELISA) of bulk tank samples submitted from dairy herds for monitoring purposes.

The last two methods are influenced by vaccination (dogs and cattle). MAT results are also very dependent on the range of serology (pools or single serovars) undertaken.

Kidney specimens examined by RT-PCR for pathogenic leptospires

Between April and June 2024, a total of 71 kidney specimens (kidneys from 13 cattle, 52 pigs, and 6 foxes) were examined by RT-PCR for pathogenic leptospires. There were 7 positive kidney test results, from 2 pigs and 5 foxes. One of the submitted pig samples was unsuitable for testing because it was too autolysed.

Serology for *Leptospira* serovars

During Q2 2024, a total of 406 serum samples from a range of species were tested for *Leptospira* antibodies. Of these, 87 canine sera were tested for export purposes and 51 canine sera were tested for diagnostic purposes. There were 63 porcine samples which were tested for *L.* Bratislava, and 181 bovine samples were tested for *L.* Hardjo bovis.

Table 2. Single *Leptospira* serovars tested in dogs, pigs, and cattle expressed as percentage positive for the number of samples tested for each serovar

Table notes:

- more than one serovar may be detected in a serum sample
- abbreviations used in this table:

    - Canine E. = canine export (dogs tested for export purposes)
    - Canine D. = canine diagnostic (dogs tested for diagnostic purposes)
- the total tested columns are the numbers of samples tested for each serovar
- % positive is the percentage of each tested serovar which gave a positive result, for example 19.5% of 87 canine export samples tested were positive for *L.* Canicola antibodies

Species	Serovar	Total tested: Q2 2024	% positive	Total tested: Q2 2023	% positive
Canine E.	*L.* Canicola	87	19.5	97	14.4
Canine E.	*L.* Icterohaemorrhagiae	7	0	6	16.7
Canine D.	*L.* Australis	9	77.8	6	100
Canine D.	*L.* Autumnalis	9	22.2	6	0
Canine D.	*L.* Bratislava	36	5.6	33	6.1
Canine D.	*L.* Canicola	51	31.4	26	30.8
Canine D.	*L.* Copenhagenii	43	39.5	29	27.6
Canine D.	*L.* Grippotyphosa	4	75	1	0
Canine D.	*L.* Icterohaemorrhagiae	40	10	31	0
Canine D.	*L.* Pomona	4	75	1	0
Canine D.	*L.* Sejroe	3	0	1	100
Porcine	*L.* Bratislava	63	20.6	88	19.3
Bovine	*L.* Hardjo bovis	181	9.9	265	9.4

In addition to single serovars, *Leptospira* pools (multiple serovars) are tested on a significant number of canine, porcine, and bovine samples. Pooled serovars are not included in the above data.

L. Hardjo bulk milk antibody tests

Between April and June 2024 there were 7 bulk milk *L.* Hardjo antibody tests for monitoring purposes, which gave the following results: 2 (28.6%) were negative, none (0%) were low positive, 1 (14.3%) was mid positive, and 4 (57.1%) were high positive.

For comparison, between April and June 2023 there were 8 bulk milk *L.* Hardjo antibody tests (for monitoring purposes) which gave the following results: 3 (37.5%) were negative, 0 (0%) were low positive, 1 (12.5%) was mid positive and 4 (50%) were high positive.

The significance of these observations is heavily influenced by vaccination status and selection, although it is thought unlikely that fully vaccinated herds contributed many samples. Low submission numbers also make comparisons across the two years difficult.

2.3 Mycobacteria (excluding bovine cases of *M. bovis*)

Since *Mycobacterium bovis* became notifiable in all species in 2006, the number of samples examined by APHA has increased, particularly from pets and camelids. Samples from pigs are mainly submitted by Official Veterinarians at abattoirs.

The APHA testing protocol has changed, and since 30 March 2022 all new submissions from non-bovine animals have been tested by PCR, which detects the *M. tuberculosis* complex and *M. bovis*. If positive for the *M. tuberculosis* complex and *M. bovis*, the sample is sent for culture to establish the whole genome sequencing (WGS) clade of *M. bovis*.

If positive for the *M. tuberculosis* complex and negative for *M. bovis*, an unvalidated PCR for *M. microti* is carried out. If the PCR is positive for *M. microti*, there is no further testing. If the PCR for *M. microti* is negative, culture is carried out to establish the Mycobacterium present (possibilities include other members of the *M. tuberculosis* complex such as *M. tuberculosis* or *M. caprae*).

This testing protocol means that we do not receive results for as wide a range of non-statutory *Mycobacterium* sp. as compared to the historic testing protocols. An update on test results will be provided in the annual report.

2.4 Q fever

PCR is used to confirm the presence of *Coxiella burnetii*, typically following the identification of suspicious acid-fast bodies in Modified Ziehl-Neelsen (MZN)-stained smears of placentae (or foetal samples). Confirmation of Q fever as a cause of fetopathy requires histopathology and immunohistochemistry of placental tissue, in addition to a positive PCR result. In each case when *C. burnetii* is detected by PCR, public health colleagues are informed of the incident and the zoonotic potential of this organism is highlighted to the farmer and private veterinary surgeon, with the provision of an advisory sheet about Q fever.

Comparisons of Q fever data with previous years should be made with caution because from April 2021 Q fever has been a reportable disease. In 2023 there was a notable increase in bovine test requests for the APHA *C. burnetii* PCR test. It is important to note that an increase in the detection of *C. burnetii* does not necessarily equate to an increased prevalence.

During the period April to June 2024 a total of 33 samples (from 28 submissions) were tested for the presence of *C. burnetii* by PCR at the APHA Q fever National Reference Laboratory, Penrith Veterinary Investigation Centre. The samples comprised 21 placental samples, 5 foetal fluid samples, 5 vaginal swabs and 2 unspecified swabs. The *C. burnetii* PCR has been validated for placental and foetal fluid samples, although other samples are also tested on agreement with the customer.

These samples were from 23 cattle submissions, one sheep submission, one goat submission and three alpaca submissions. Ten samples tested positive for *C. burnetii*

which were 9 cattle samples (from 8 submissions) and one alpaca sample. *C. burnetii* was not detected in the sheep and goat samples. Further information about the positive submissions is provided in section 3.4.

In addition, the detection of *C. burnetii* in 25 bovine bulk milk samples by PCR at an overseas laboratory (22 from English dairy farms, two from Welsh dairy farms, and one from a Scottish dairy farm) were reported to APHA.

2.5 *Streptococcus suis*

Streptococcus suis isolates from diagnostic material submitted to APHA and SRUC Veterinary Investigation Centres are typed further for disease surveillance purposes. The submission numbers and serotypes from porcine diagnostic material submitted during the period April to June 2024 are shown below, with data for the previous 2 years (Q2 2023 and Q2 2022) for comparison.

Table 3. *Streptococcus suis* serotypes from porcine diagnostic material

Table notes:

- UT = untypeable
- 1/2 = is a recognised distinct serotype which reacts with both 1 and 2 antisera

	1	2	3	4	6	7	8	9	12	14	19	25	33	34	1/2	UT	Total
Q2 2022	6	8	-	1	-	2	1	-	-	-	-	-	-	-	-	-	**18**
Q2 2023	1	10	1	1	2	2	2	-	-	1	-	-	-	-	-	2	**22**
Q2 2024	1	8	-	-	-	2	1	-	1	2	-	1	-	-	-	6	**22**

Serotype 2 was the most common serotype in Q2 for all three years, 2022, 2023 and 2024.

2.6 Toxoplasmosis

The European Food Safety Authority (EFSA Journal 2007, 583, 1 to 64) highlighted the significance of toxoplasmosis as a foodborne zoonosis and the need to improve surveillance in this field. Serological examinations for *Toxoplasma gondii* using the latex agglutination test (LAT) are undertaken by the APHA on sera submitted to Veterinary Investigation Centres. The findings presented below provide a summary of the serological status of samples submitted for diagnosis, monitoring and screening purposes during the period April to June 2024, but do not constitute a structured survey. Positive samples, as

defined here, have LAT titres of 1/64 or greater and indicate a history of exposure to this protozoan parasite. Toxoplasmosis as a cause of fetopathy in sheep and goats is diagnosed through antigen (PCR) testing of placental cotyledon.

During the period April to June 2024, one ovine sample and 3 caprine samples were submitted for Toxoplasma serology. There was one positive titre which was the ovine sample. Toxoplasma fetopathy figures for sheep and goats are provided in Table 1.

3. Investigations into zoonotic and potentially zoonotic incidents

Protocols for the investigation of zoonotic disease incidents in England and Wales are set out in the Guidelines for the Investigation of Zoonotic Disease (England and Wales).

There is similar guidance on the investigation and management of zoonotic disease in Scotland.

Advice for members of the public planning a trip to animal-associated visitor attractions, and other information, can be found on the UK Health Security Agency (UKHSA) zoonotic disease webpage.

The Industry Code of Practice for preventing or controlling ill health from animal contact at visitor attractions is available on the National Farm Attractions Network website.

The APHA-assisted investigations described within sections 3.1 Cryptosporidiosis, 3.2 STEC (Shiga toxin-producing *Escherichia coli*) and 3.3 *Corynebacterium ulcerans* cover England and Wales.

3.1 Cryptosporidiosis

Investigations to assist in human outbreaks of cryptosporidiosis linked to direct contact with animals are undertaken at the request of Consultants in Communicable Disease Control (CsCDC) of the UKHSA and Public Health Wales (PHW) and in collaboration with the National Cryptosporidium Reference Unit, Swansea, and follow jointly agreed guidelines. Consultants in Public Health Medicine (CsPHM) lead on these zoonoses investigations in Scotland.

Quarter 2 (Q2) is traditionally the busiest time for cryptosporidiosis investigations and is related to the frequency of open farm visits undertaken by families or school groups around the Easter holiday and bank holidays. Contact with young lambs either through bottle-feeding or handling is a high risk activity for the zoonotic spread of *Cryptosporidium parvum* in these settings. The availability and accessibility of appropriate and suitably located hand-washing facilities including soap, rather than antimicrobial gel (which is not effective for this pathogen) is extremely important.

Although some human cryptosporidiosis incidents and outbreaks commenced in March, the majority of investigations took place during Q2 2024, during which APHA assisted Incident Management Teams (IMTs) with the investigation of 12 human cryptosporidium incidents and outbreaks. Eleven of these were epidemiologically linked to farms in England, and one was epidemiologically linked to a farm in Wales. Two of these were combined Shiga toxin-producing *Escherichia coli* (STEC) and Cryptosporidium outbreaks, and are commented on in section 3.2. The majority of the farm premises were open farms.

There were four APHA farm advisory visits, three with sampling. APHA provided comprehensive veterinary advice during the IMT meetings which included advice on identified deficiencies to assist farm businesses to comply with the Industry Code of Practice for visitor attractions.

This year, some farm visitor attractions were offering cuddling of young lambs and piglets to visitors. This involves close contact, potential prolonged contact, and potential for clothing and footwear contamination. Activities like these increase the risk of zoonotic transmission of a range of zoonotic organisms.

3.2 STEC

Shiga toxin-producing *Escherichia coli* (STEC, formerly known as VTEC) outbreak investigations are undertaken, according to agreed guidelines, at the request of CsCDC of UKHSA and PHW (CsPHM in Scotland) where an animal-associated source is suspected. These investigations often also involve collaboration with other organisations, including the environmental health departments of local authorities and the Health and Safety Executive (HSE). Determination of virulence factors, including shiga toxin genes and comparison of human and animal isolates by whole genome sequence (WGS) analysis, are performed by the Gastrointestinal Bacteria Reference Unit (GBRU), UKHSA Colindale. If isolates from animals circumstantially implicated in outbreaks have an indistinguishable WGS profile to those from human cases, this is taken as confirmatory evidence of the epidemiological link. Other STECs or WGS types may be detected incidentally during the investigation of animal premises.

During Q2 2024 APHA continued assisting the IMT with the investigation of a STEC O26 human outbreak which commenced in Q1 which was epidemiologically linked with animal contact activities at a farm visitor attraction. Following an advisory and sampling visit suspect *E. coli* O26 was detected in freshly voided animal faeces samples, which on further characterisation with sequencing at the UKHSA GBRU, were found to be the same strain as the human isolates. The farm made the recommended improvements and there have been no further cases. The outbreak is considered resolved.

During Q2 APHA also assisted IMTs with the investigation of two combined STEC and Cryptosporidium outbreaks, both linked to open farms. One involved STEC O157, the other STEC O26. APHA did an advisory and sampling visit to the farm that was epidemiologically linked to the STEC O157 and Cryptosporidium outbreak. Ten *E. coli* O157 isolates, identified by APHA from bacteriology on the freshly voided animal faeces samples, were sent for further characterisation at the GBRU. These were confirmed as

genetically identical to the human outbreak strain of STEC O157. For both STEC and cryptosporidium investigations APHA provided comprehensive advice to IMTs and to the farm premises regarding identified deficiencies with compliance with the Industry Code of Practice.

The most frequently identified deficiencies at animal contact visitor attractions (including open farms) include suboptimal handwashing facilities (number, accessibility, appropriateness); suboptimal supervision of animal contact; contamination of walkways with soiled animal bedding or faeces; and unclear demarcation of animal contact versus non-contact areas.

It is recommended that all open-farm attractions (and other venues where close or direct contact by members of the public with animals is anticipated) are fully compliant with the Industry Code of Practice for preventing or controlling ill health from animal contact at visitor attractions. A farm's private veterinary surgeon is another source of advice and support, including the development and review of animal health plans.

3.3 *Corynebacterium ulcerans*

Corynebacterium ulcerans was first isolated from cases of throat infection in humans in 1926, with zoonotic outbreaks initially associated with direct contact with farm animals or consumption of unpasteurised milk. More recently zoonotic incidents have been associated with contact with companion animals such as dogs and cats. *C. ulcerans* can be asymptomatically carried in the throat of some dogs and cats. *C. ulcerans* has also been isolated from skin lesions, nasal discharge, and other anatomical sites of clinically unwell dogs and cats. The organism can produce diphtheria toxin, which can produce human disease with the same clinical signs as cutaneous or respiratory diphtheria caused by *C. diphtheriae*.

APHA and SRUC Veterinary Services in Scotland assist public health colleagues in the investigation of human index cases of *C. ulcerans* where there has been animal contact. Similarly; for animal index cases, APHA/SRUC vets will support the private veterinary surgeon and provide animal related advice. The guidance for the public health management of toxigenic *C. ulcerans* in companion animals in England is available online: Public health management of toxigenic C. ulcerans in companion animals.

Toxigenic *C. ulcerans* investigations are multidisciplinary and APHA works closely with public health colleagues to investigate, manage, and provide advice regarding the animals involved. Typically, APHA will also liaise closely with the private veterinary surgeon to facilitate the taking of and testing of swabs, antibiotic treatment, and post-treatment clearance swabs as appropriate. APHA also provides advice on health and safety procedures for private veterinary surgeons and pet owners, including information on cleaning of pet bedding and pet toys. For animal index cases comprehensive information is available in the companion animal public health guidance (see above link).

During Q2 2024 APHA assisted the UKHSA Health Protection Teams (HPTs) with 13 toxigenic *C. ulcerans* incidents, of which 12 were companion animal index cases, and one was an animal index case involving a baboon.

Of the 12 companion animal index cases, 6 were dogs and 6 were cats. The clinical presentations were as follows: 5 of 12 involved skin lesions (1 cat and 4 dogs); 3 of 12 involved infections of the toe or claw (2 cats and 1 dog), 2 cats had respiratory signs, and one of these cats had nasal neoplasia. Another cat presented with an abscess. One dog had a urinary tract infection.

APHA recommends surveillance swabbing of pet cats and dogs that are in the same household as an animal index case to investigate if there has been any animal-to-animal transmission. Surveillance swabbing of household contact animals was undertaken for 8 of the animal index cases, with a total of 10 contact animals swabbed. Toxigenic *C. ulcerans* was only detected in one of the 10 household contact animals.

Ten of the animal index cases identified in Q2 2024 have concluded, with no detection of *C. ulcerans* on bacteriology cultures of post-antibiotic clearance swabs of 9 of the index animals. The cat with nasal neoplasia was euthanased due to the severity of the cancer. Two cases are ongoing as the animals, including a positive contact, have not yet completed treatment.

3.4 Q fever *(Coxiella burnetii)*

In each case when *C. burnetii* is detected by PCR, public health colleagues are informed of the incident and the zoonotic potential of this organism is highlighted to the farmer and private veterinary surgeon, with the provision of an advisory sheet: https://www.gov.uk/government/publications/q-fever-good-practice-for-farmers/q-fever-information-for-farmers.

For all ruminant abortion investigations and reports of the detection of *C. burnetii*, APHA provides comprehensive advice to private veterinary surgeons, including information about optimising ruminant abortion investigations, laboratory testing, and zoonoses advice for private vets to pass on to their farmer clients.

Transmission of *C. burnetii* to humans is most frequently due to inhalation of contaminated aerosols or contaminated dusts. Aerosolized bacteria are spread in the environment by infected animals after normal births or abortion. Birth products contain the highest concentration of bacteria, but *C. burnetii* is also found in urine, faeces and milk of infected animals.

During Q2 2024 there were 7 separate dairy farms where *C. burnetii* was detected by PCR in 8 samples submitted from cows that had aborted their calves. Three of these farms were farms which had also performed an industry-linked *C. burnetii* bulk milk PCR test which had returned a positive result.

The 9th positive bovine sample where *C. burnetii* was detected comprised foetal fluid from a deformed premature neonatal calf. The approximately 8 ½ -months gestation calf was born with twisted legs and was euthanased on humane grounds. Infection with Schmallenberg virus (SBV) was suspected and initial laboratory testing was for this. The SBV test results (PCR and serology) were both negative. Following this further laboratory tests were performed which resulted in the detection of *C. burnetii.* This may have been an incidental finding.

The *C. burnetii* positive placental sample from an alpaca that had aborted, was part of an investigation where 10 of 97 mated alpacas within a herd of 400 alpacas had aborted. These were late term abortions, within 30-60 days of term. There has been an extensive veterinary investigation with postmortem investigations and a range of laboratory tests. No other infectious causes of abortion were identified, although the role of the single detection of *C. burnetii* had not been determined. Four other placental samples from alpaca dams from this premises tested negative for *C. burnetii*, thus it was possible that a non-infectious cause of abortion may have been involved.

3.5 Avian chlamydiosis (psittacosis)

Chlamydia psittaci, the causative agent of avian chlamydiosis (psittacosis), can cause serious human illness. The disease has been described in many species of birds, particularly in parrots, parakeets, budgerigars, and cockatiels. Other commonly affected birds include pigeons and doves. Ducks and turkeys may also be affected, but chickens less frequently. Birds can carry the organism without any signs of disease, or they can become mildly to severely ill.

C. psittaci can lead to inapparent subclinical infection or acute, subacute, or chronic disease, characterised by respiratory, digestive, or systemic infection. The clinical signs are generally non-specific and vary greatly in severity, depending on the species and age of the bird and the *Chlamydia* strain involved. Humans are most likely to contract *C. psittaci* infection through inhalation of dust or aerosols contaminated by secretions from infected birds for example faeces, ocular and respiratory secretions. It is therefore important to follow current health and safety measures when in contact with birds. Further information on psittacosis infection is available online at: Psittacosis - UKHSA guidance and Psittacosis - HSE factsheet.

The detection of *C. psittaci* in psittacine birds is statutorily reportable to APHA. During Q2 2024 there were two reports of the detection of *C. psittaci* in psittacine birds by PCR testing that had been performed at private veterinary laboratories.

The first reported case involved cockatiels belonging to a pet owner who had, over a period of several months, acquired several psittacine birds. The second bird, a cockatiel, appeared unwell on acquisition and it died. Following this two more birds died. There were two live cockatiels remaining, one of which was acquired from a breeder. Although these two cockatiels appeared healthy, *C. psittaci* was detected in their faeces by PCR. There was no reported human illness. Zoonotic advice was provided to the pet owner.

The second reported case involved a veterinary investigation of psittacine birds located at a pet store. As there had been a human case of psittacosis earlier in the year, with an epidemiological link to the pet store, the Local Authority and the Health and Safety Executive (HSE) had already been involved. The human case had acquired a psittacine bird (a caique) from the pet store, and had reported concerns about psittacosis to the local authority. Following this the pet store contacted their private veterinary surgeon and screening of birds at the pet store was actioned. The vet found a macaw appeared unwell and a choanal-cloacal swab was taken, and tested positive by PCR for *C. psittaci*.

The private vet also tested three other birds from a collection of psittacine birds. These birds were all found to be healthy, with no clinical signs. The samples were choanal-cloacal swabs. All of these birds were asymptomatic. One of the samples (from a caique) resulted in the detection of *C. psittaci*. The birds were isolated, treated for > 42 days with doxycycline, and cared for by one member of staff, who took health and safety precautions to prevent the acquisition of zoonotic infection.

4. *Brucella canis*

Since July 2020, there has been a large increase in the number of incidents of canine brucellosis due to infection with *Brucella canis.* APHA, in liaison with health protection agencies across Great Britain, has been involved in investigating these incidents. The UK Chief Veterinary Officer advised on this potential zoonotic disease in a letter published in the Vet Record in February 2021. Amendments to the Zoonoses Order in 2021 added dogs to the list of animals for which brucellosis is a reportable disease in Great Britain.

Further information is available in APHA's Canine Brucellosis: Summary information sheet and in our list of frequently asked Brucella canis testing questions.

General information for the public and dog owners is available on the GOV.UK website.

The Human Animal Infections and Risk Surveillance group (HAIRS) Brucella canis risk assessment outlines the current risk to the UK human population from canine brucellosis.

The British Small Animal Veterinary Association (BSAVA) have published a scientific document available at: https://www.bsavalibrary.com/content/chapter/10.22233/9781910443514.chap9#html_fulltext

During Q2 of 2024, there were 76 epidemiologically separate incidents where there was strong evidence of infection with *B. canis*. All 76 were identified by serology, and presented at least one other risk factor for *B. canis* infection, and were reported to the relevant public health authorities. All incidents identified during this quarter involved the testing of a single dog, although this may be subject to change if further information about significant contacts becomes available.

In addition to providing information about *B. canis*, APHA's Imported disease summaries for Dogs and Cats (August 2022) document provides a short summary of some other

diseases that could be imported into the UK with the importation of dogs and cats. This list is not exhaustive but provides a useful summary and signposts to further information for some conditions of concern.