UK Health Security Agency

Legionnaires' disease- an overview of what's been happening in 2026

Kate James – Out Posted Scientist FW&E Microbiology Laboratories

National data 2010 -2024

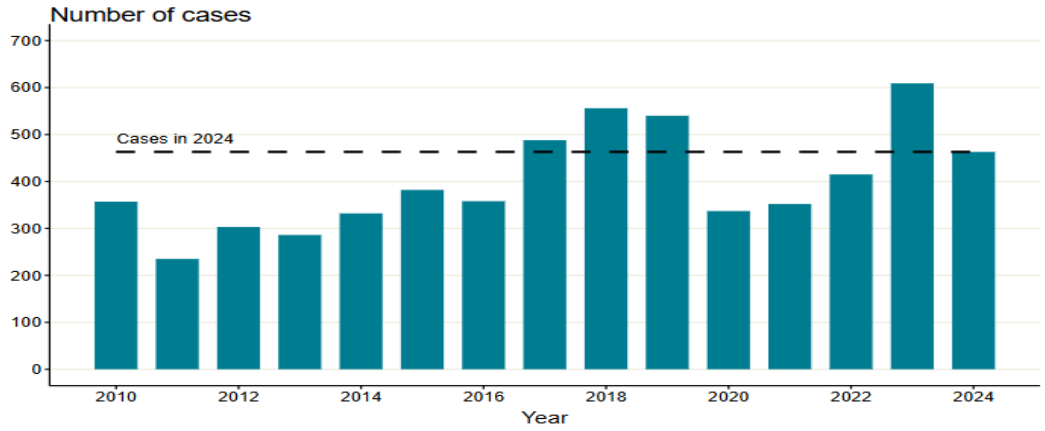
Legionellosis in residents of England and Wales: 2024 - GOV.UK

Trends in Legionnaires' disease in England and Wales

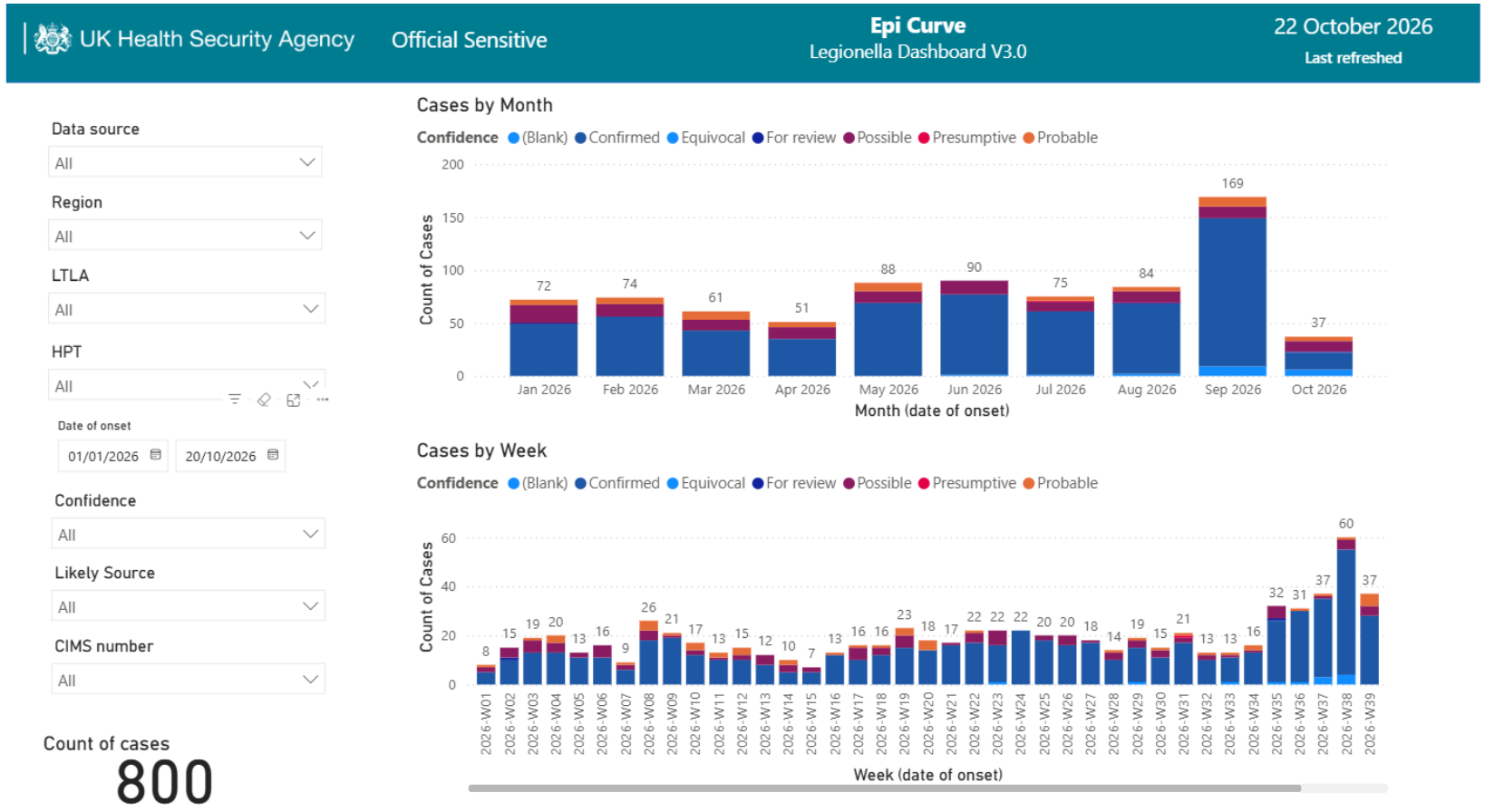
Reported cases of Legionnaires' disease in England and Wales

LD became a notifiable disease in April 2010. With the exception of the COVID-19 pandemic period, the annual number of reported cases of LD in England and Wales per year has broadly increased over the last 15 years (Figure 1).

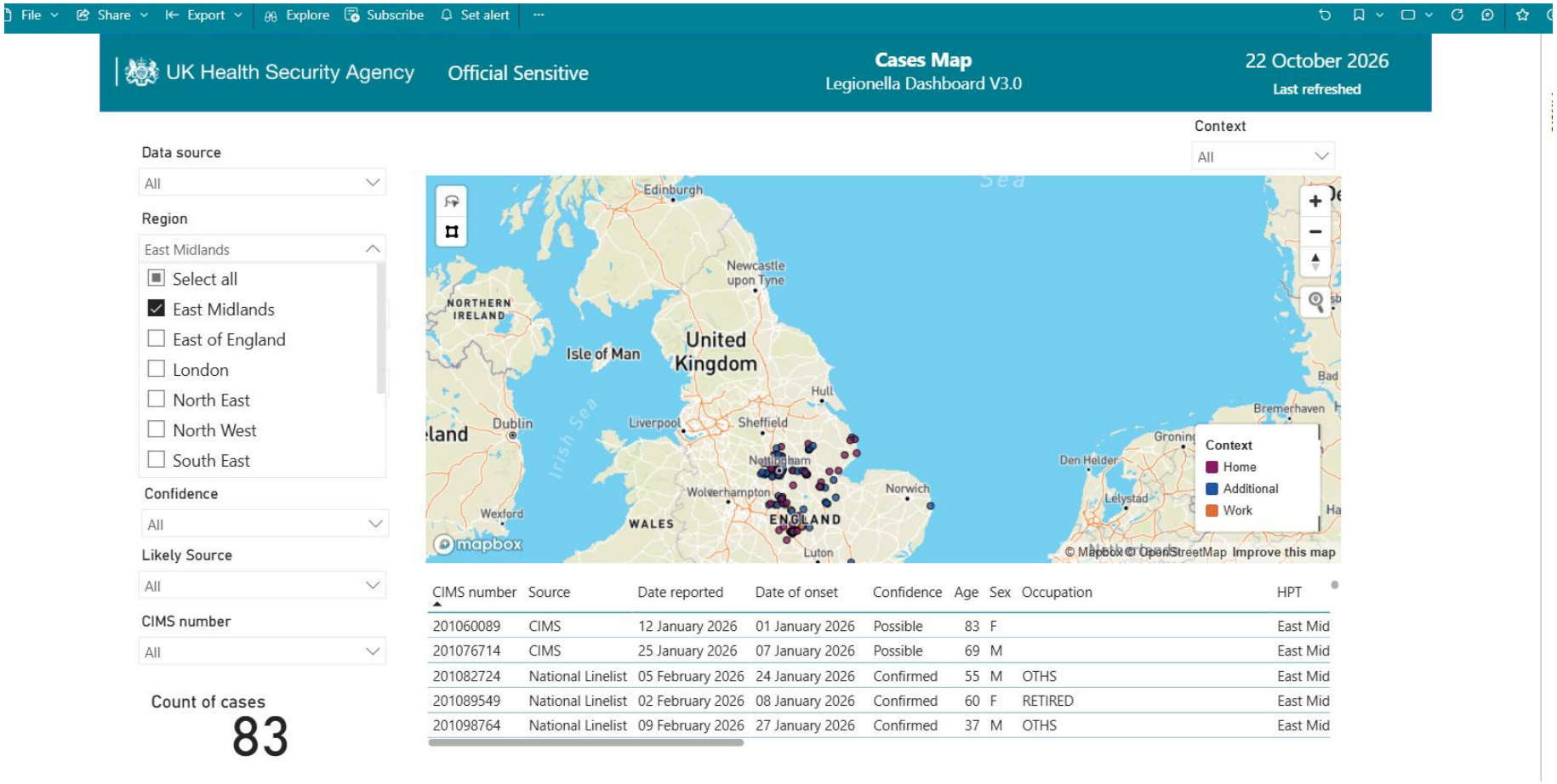
Figure 1. Number of confirmed cases of Legionnaires' disease by year of symptom onset, England and Wales, 2010 to 2024



Dashboard of cases for 2025 to October 20th 2026



Case Map Dashboard East Midlands



CIMS number	Source	Date reported	Date of onset	Confidence	Age	Sex	Occupation	HPT
201060089	CIMS	12 January 2026	01 January 2026	Possible	83	F		East Mid
201076714	CIMS	25 January 2026	07 January 2026	Possible	69	M		East Mid
201082724	National Linelist	05 February 2026	24 January 2026	Confirmed	55	M	OTHS	East Mid
201089549	National Linelist	02 February 2026	08 January 2026	Confirmed	60	F	RETIRED	East Mid
201098764	National Linelist	09 February 2026	27 January 2026	Confirmed	37	M	OTHS	East Mid

September 2026



- Case notifications started to increase – we await national data to confirm if true exceedance across the year.

Summer 2026 provisionally hottest on record for the UK

Author: Met Office

13:00 (UTC+1) on Tue 1 Sep 2026

Updated at 13:00 (UTC+1) on Thu 17 Sep 2026

The season's mean temperature was made around 130 times more likely due to human-induced climate change.

An average mean temperature of 16.5°C puts this summer as provisionally the warmest on record, as well as the warmest season for the UK in a series which goes back to 1884.

It was also one of the sunniest summers on record (dating back to 1910) for some places, with the season being very dry for many, though late season rain helped steer places away from seasonal rainfall records

Cases, Incidents, clusters and outbreaks

- Recap on guidance
- HSG274 Legionnaires' disease - HSE
- L8 ACOP Legionnaires' disease. The control of legionella bacteria in water systems - HSE
- HTM 04-01 NHS England » Health Technical Memorandum 04-01: Safe water in healthcare premises

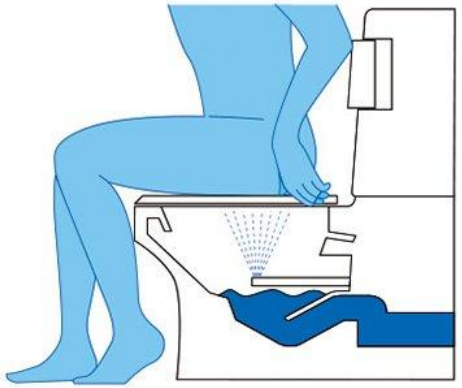
Potential Sources of legionnaires



















Electric Fireplace

› Nihon Koshu Eisei Zasshi. 2026 Aug 29;73(8):738-746. doi: 10.11236/jph.25-143. Epub 2026 May 20.

[Legionnaires' disease outbreak caused by an electric fireplace-like interior product generating ultrasonic aerosols]

[Article in Japanese]
Yuko Kuwahata [1], Ryuto Morikawa [1], Aiko Misawa [1], Kohei Yamashita [1], Yasuko Murai [2], Yu Watanabe [2], Chieko Muto [3], Moeko Umetsu [3], Teruaki Kinoshita [3], Tomoe Shimada [4], Junko Amemura-Maekawa [4]

Affiliations + expand

PMID: 42002930 DOI: 10.11236/jph.25-143

Free article

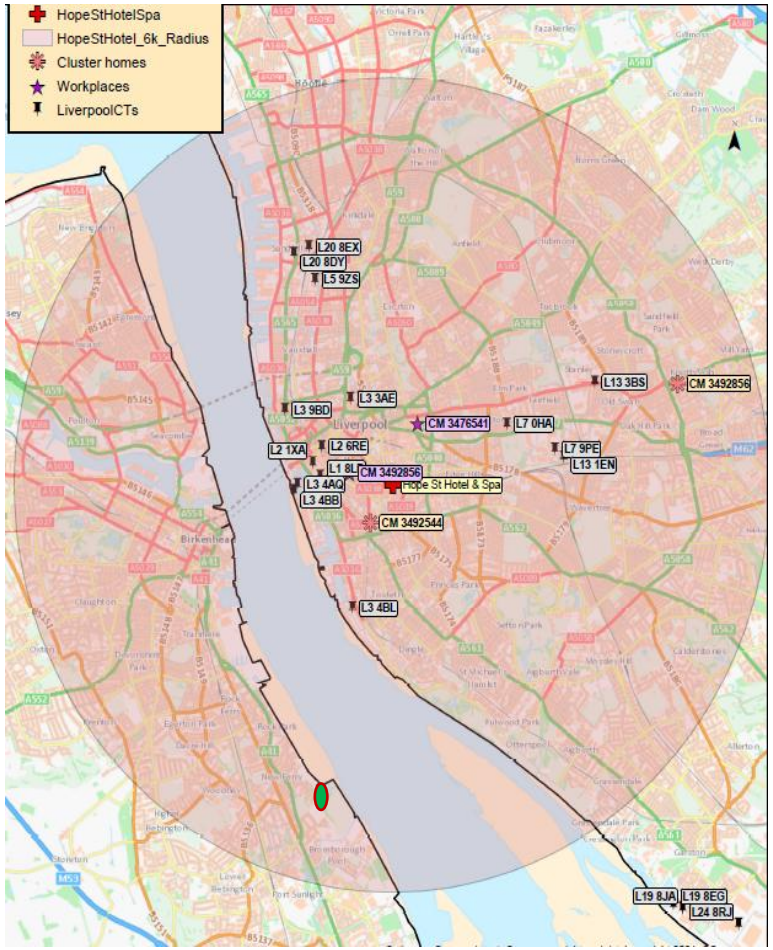
Abstract

Objectives An epidemiological study was conducted of 43 cases of Legionnaires' disease reported to the Tokyo Metropolitan Tama-Kodaira Public Health Center and other health centers between

Cooling towers



Legionella Management in Complex Water Systems; Responding to incidents? Consider wind and topography.







This year we have investigated cases and clusters linked to:

Resident in rooms in pub/ hotels
Leisure centres
Sheltered housing
Assisted living
Hospitals
Care homes
Domestic properties
Glamping sites
Festivals

- Outdoor water parks
- Holiday parks
- Lorry drivers
- Car wash
- Service stations
- Builders Merchants
- Plunge pools/ swimming pools /spa pools





Deeper dive into some of our investigations

Sheltered Housing

- We have seen notifications of cases of legionnaires who live in sheltered, assisted and rented accommodation. Investigation can be complex!
- Who are the regulators?
- It depends CQC, HSE, EH
- Housing Act may apply



Investigation into case

- I was notified of a case of legionnaires' disease sero group 1 pneumophilia who lived in council owned block of flats for the over 60's.
- 66 flats in block. All the toilets supplied water from 4 tanks on the roof.
- Most flats had hot water cylinders with water tanks. 6 flats been converted to combi boilers. Case lived in flat with combi boiler.
- I went out with EH who were sampling to verify controls.
- Flat had legionella detections over 1000 in hot water tap and detections in toilet cistern and shower.
- Further visits made to sample who block.

Outcome of investigation

- Dead legs had been left, redundant pipework following installation of new boilers
- New washing machines installed that don’t need hot water pipe so dead legs left
- Residents turning hot water off or temperature of hot water down
- Cold water temperatures above 20 degrees in building
- Only 2 /4 water tanks supplying cisterns were needed so water stagnation
- Cost of living and climate change possible impacts



Sheltered Accommodation

- I was notified of a case of legionnaires who was bedridden and lived in sheltered flat in a nursing home complex. Shared water systems. Block of 11 flats with 2 boilers and a nursing home
- Who enforces health and safety?
- Is it CQC, HSE or LA, ICB?
- It depends !!!!!!
- HSE enforce in the sheltered accommodation. CQC do the nursing home for residents. There are commissioned beds so Adult social care and ICB have interest. Does the housing act apply – it's someone own flat !!

Vehicle washers

- Cases of legionnaires associated with being in the vicinity of vehicles being jet washed over wash pit.
- Water run off collected filtered and reused
- What could possibly go wrong!



Cooling tower clusters

Cooling Towers; Not always visible on Google Maps





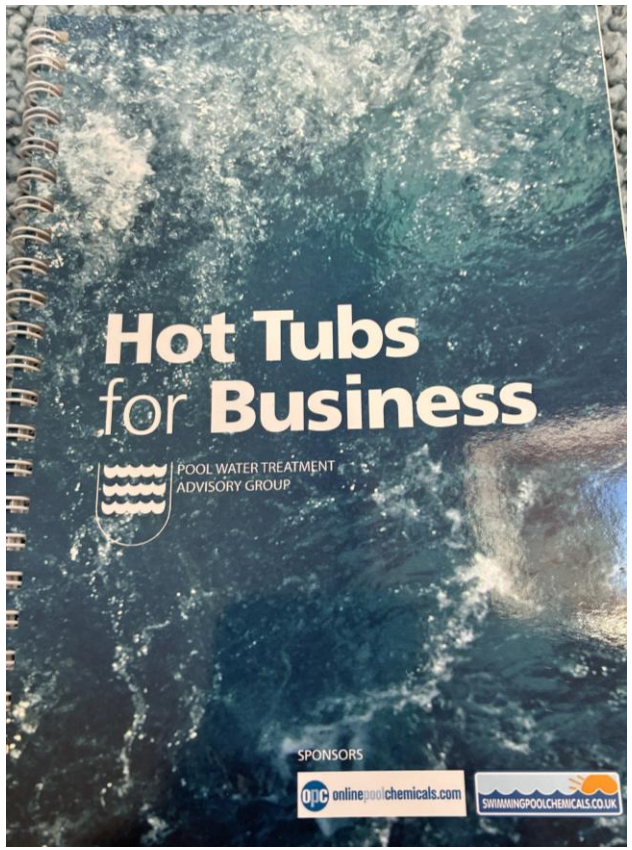


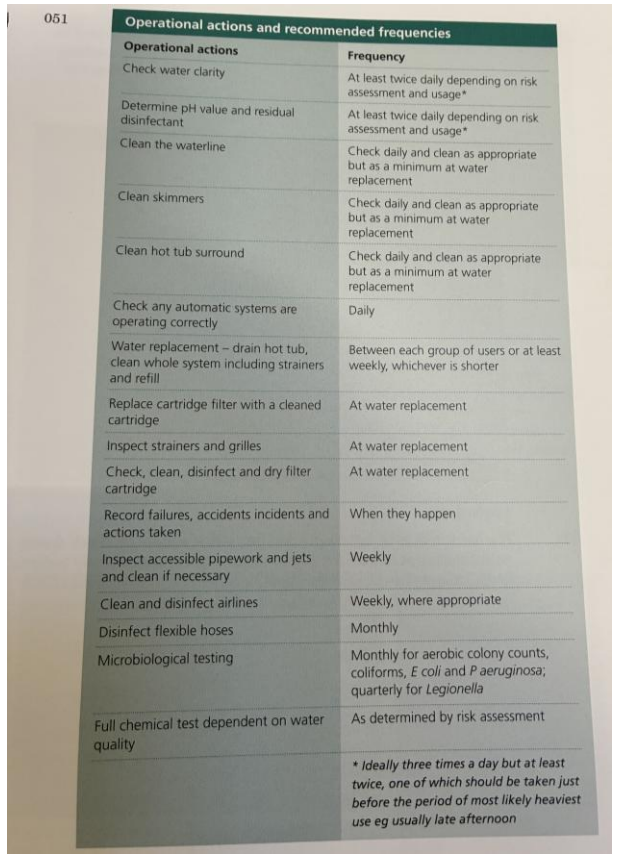


Festivals and hot tubs



Guidance



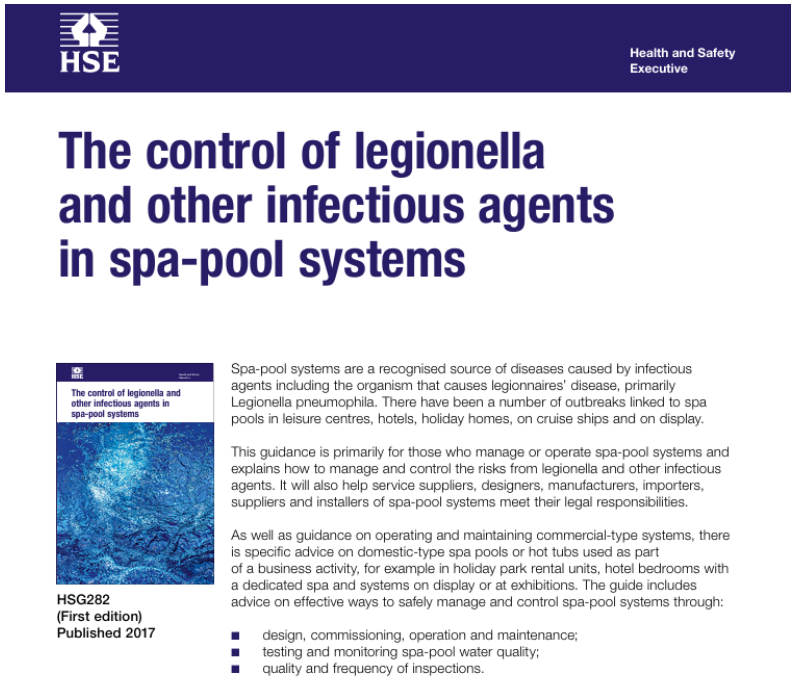


051

Operational actions and recommended frequencies

Operational actions	Frequency
Check water clarity	At least twice daily depending on risk assessment and usage*
Determine pH value and residual disinfectant	At least twice daily depending on risk assessment and usage*
Clean the waterline	Check daily and clean as appropriate but as a minimum at water replacement
Clean skimmers	Check daily and clean as appropriate but as a minimum at water replacement
Clean hot tub surround	Check daily and clean as appropriate but as a minimum at water replacement
Check any automatic systems are operating correctly	Daily
Water replacement – drain hot tub, clean whole system including strainers and refill	Between each group of users or at least weekly, whichever is shorter
Replace cartridge filter with a cleaned cartridge	At water replacement
Inspect strainers and grilles	At water replacement
Check, clean, disinfect and dry filter cartridge	At water replacement
Record failures, accidents incidents and actions taken	When they happen
Inspect accessible pipework and jets and clean if necessary	Weekly
Clean and disinfect airlines	Weekly, where appropriate
Disinfect flexible hoses	Monthly
Microbiological testing	Monthly for aerobic colony counts, coliforms, *E coli* and *P aeruginosa*; quarterly for *Legionella*
Full chemical test dependent on water quality	As determined by risk assessment

** Ideally three times a day but at least twice, one of which should be taken just before the period of most likely heaviest use eg usually late afternoon*



HSE

Health and Safety Executive

The control of legionella and other infectious agents in spa-pool systems

HSG282
(First edition)
Published 2017

Spa-pool systems are a recognised source of diseases caused by infectious agents including the organism that causes legionnaires' disease, primarily Legionella pneumophila. There have been a number of outbreaks linked to spa pools in leisure centres, hotels, holiday homes, on cruise ships and on display.

This guidance is primarily for those who manage or operate spa-pool systems and explains how to manage and control the risks from legionella and other infectious agents. It will also help service suppliers, designers, manufacturers, importers, suppliers and installers of spa-pool systems meet their legal responsibilities.

As well as guidance on operating and maintaining commercial-type systems, there is specific advice on domestic-type spa pools or hot tubs used as part of a business activity, for example in holiday park rental units, hotel bedrooms with a dedicated spa and systems on display or at exhibitions. The guide includes advice on effective ways to safely manage and control spa-pool systems through:

- design, commissioning, operation and maintenance;
- testing and monitoring spa-pool water quality;
- quality and frequency of inspections.

Sometimes you just need to get eyes and boots on the ground!!!



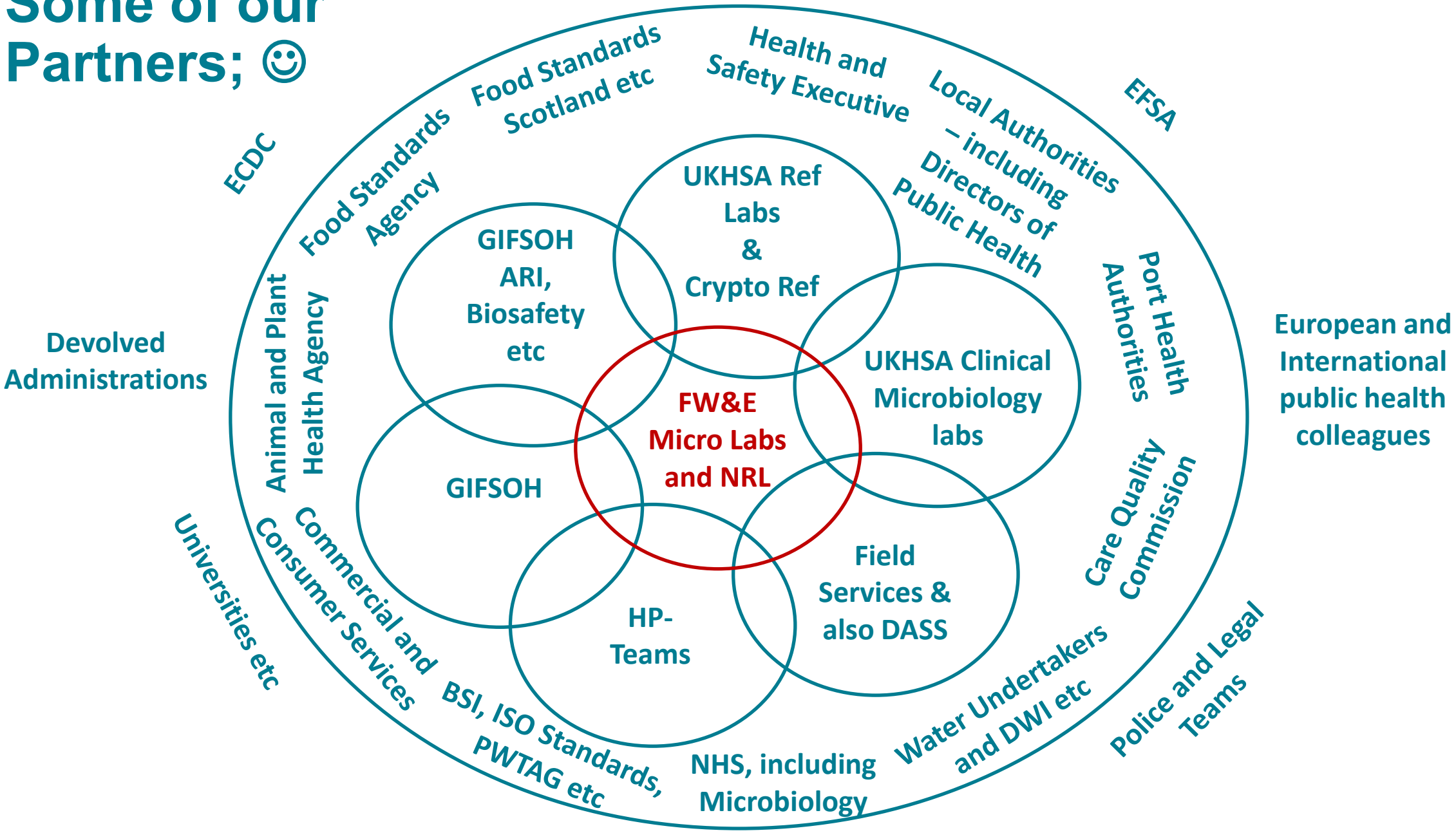


UK Health Security Agency

An Eggcellant Update
Salmonella and egg outbreak 2026

Frieda Jorgensen, UKHSA
Rob Johnston, UKHSA

Some of our Partners; ☺



FW&E Microbiology Laboratories and overview of areas served …… including Out-posted Scientists

York FW&E
North West
Elaine Forester

London FW&E
West Midlands, East Mids south and others etc …
Kate James

South West
Ben Sims



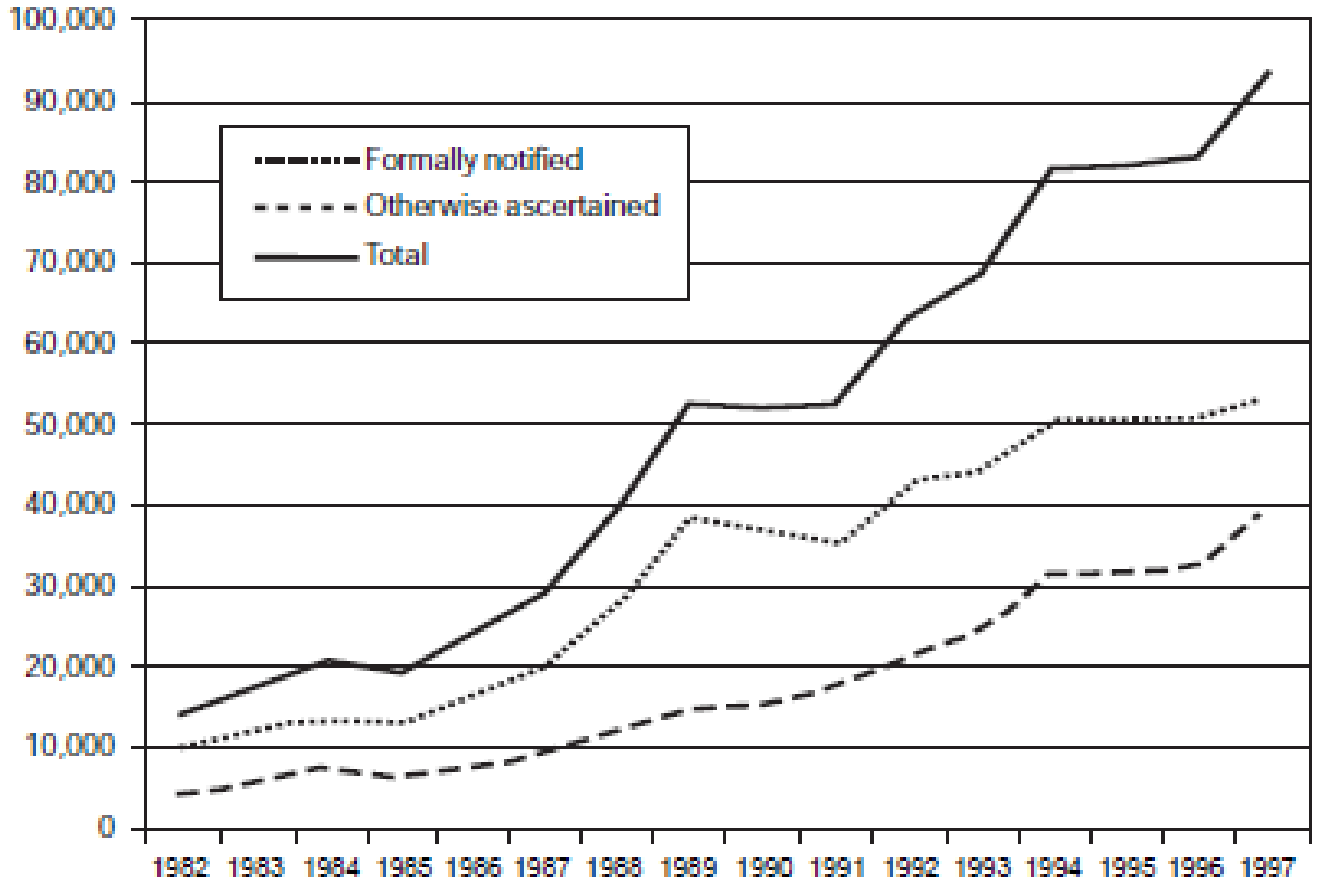
York FW&E
East Midlands Y&H & the North East
Rob Johnston

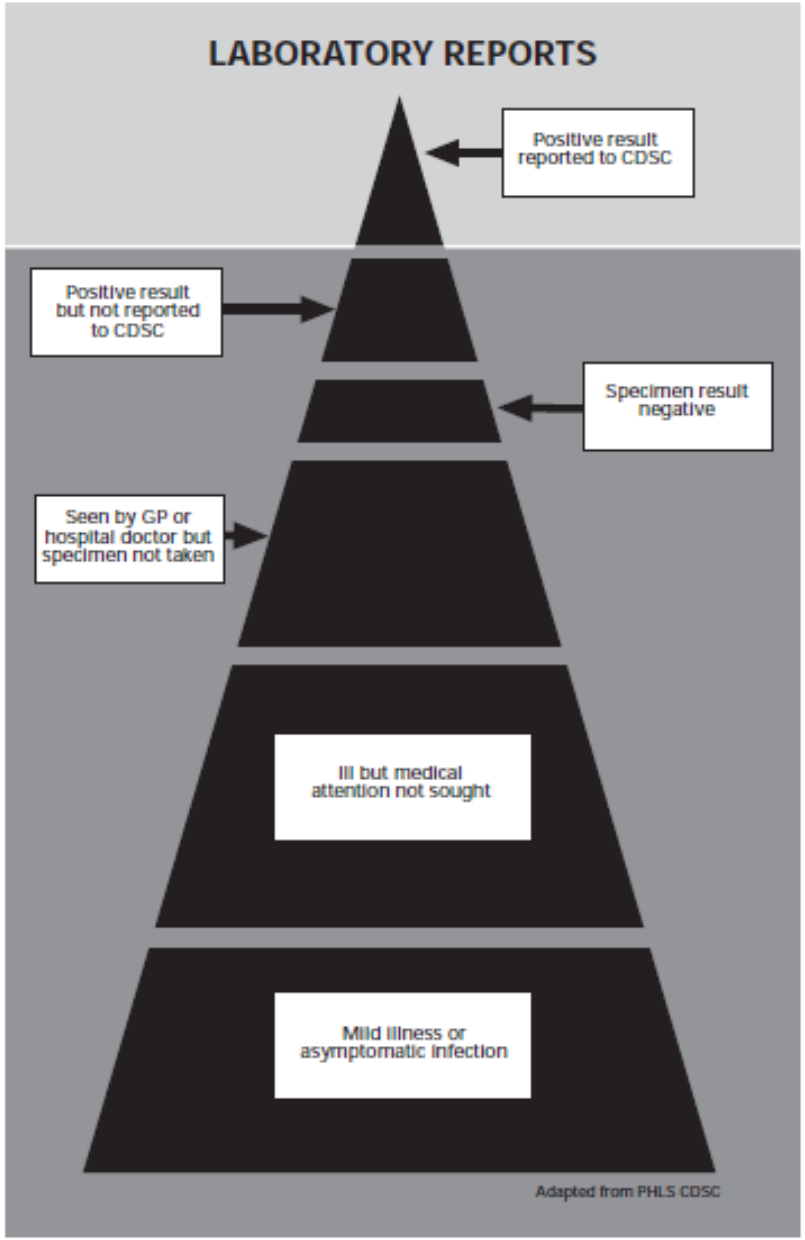
London FW&E
London & East of England
Nigel Pittock

London & Porton FW&E
South & South East
Lorraine Sadler-Reeves

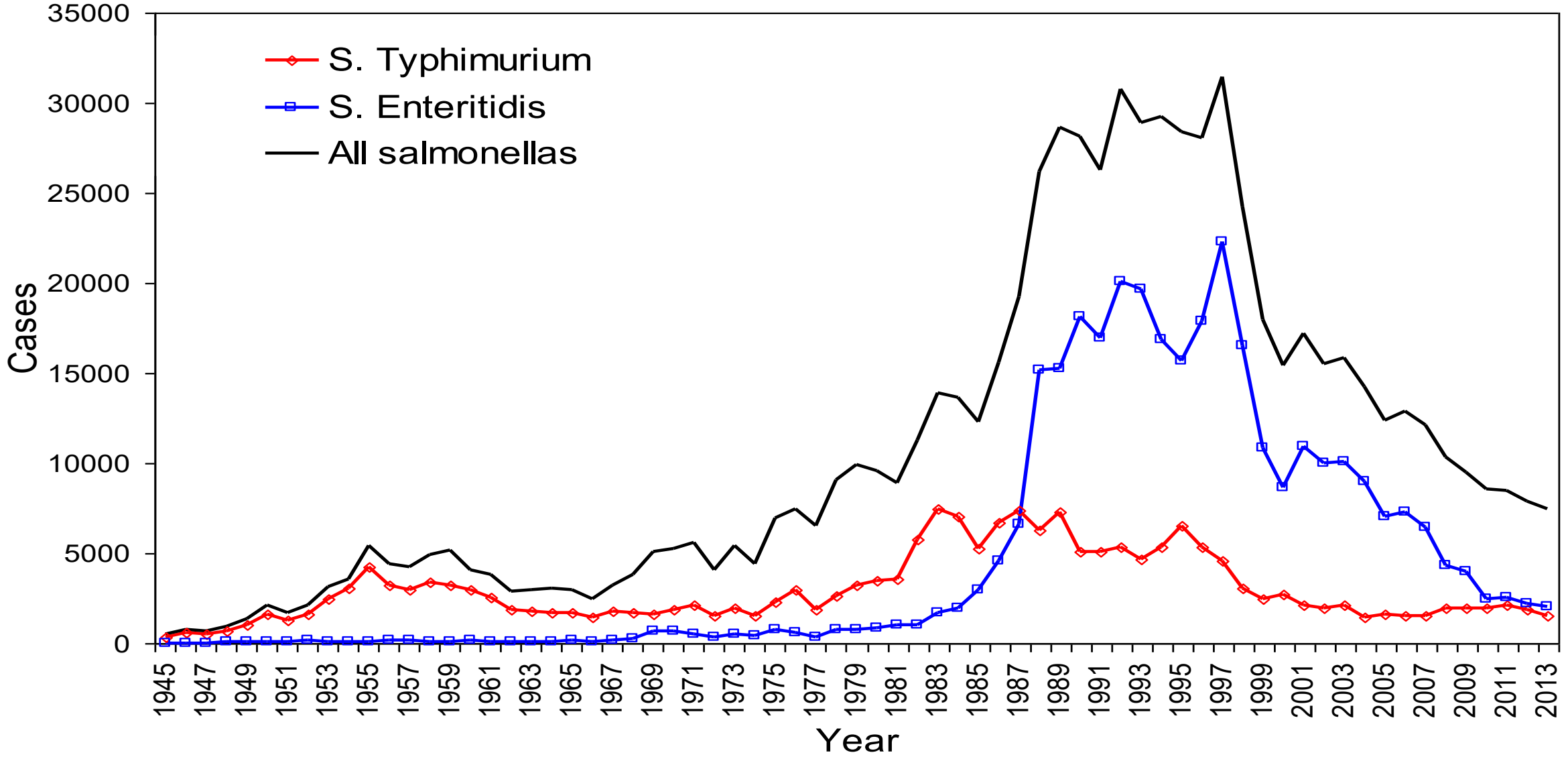
IID1 - A Report of the Study of Infectious Intestinal Disease in England; published 2000

Figure 2.1 Food Poisoning Notification in England and Wales (OPCS 1994, Anon 1996b, Anon. 1998)

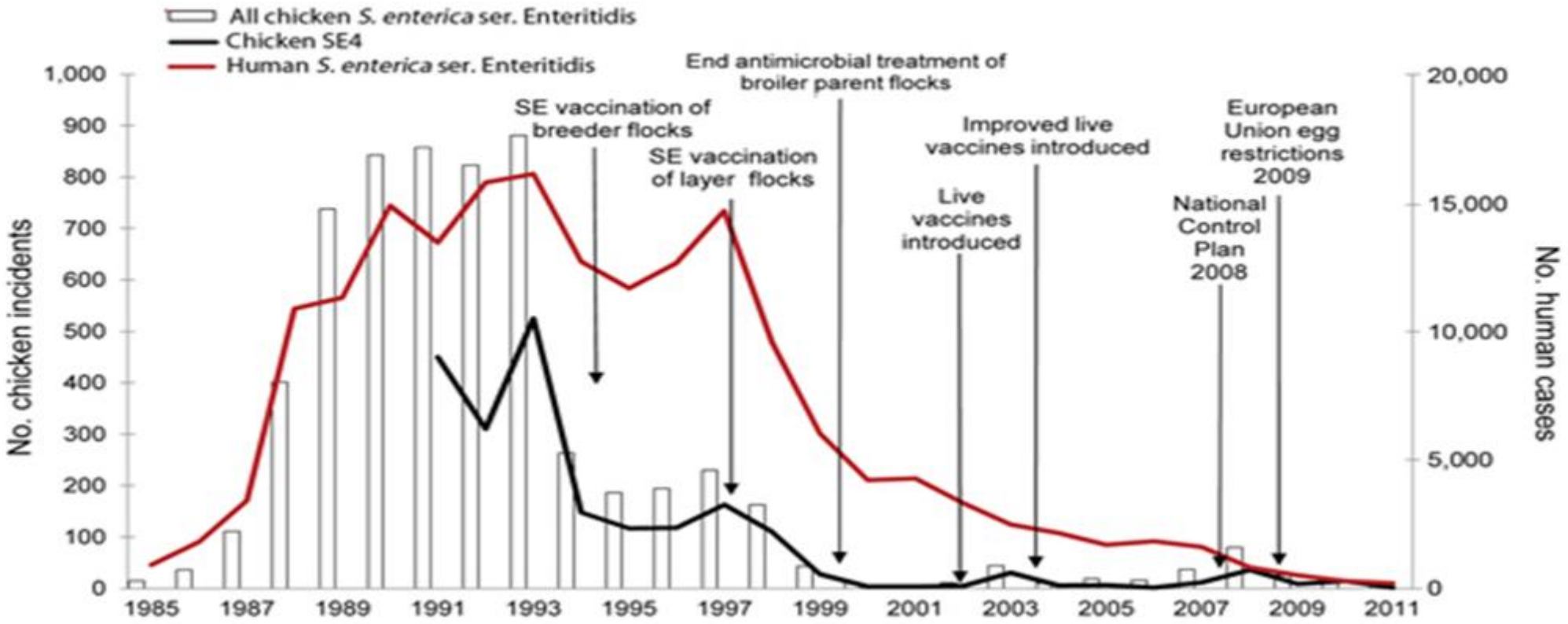




Historical reports of Salmonella 1945-2013



Incidents of *Salmonella enterica* in chickens in GB and cases of human *Salmonella* Enteritidis infection (E&W) 1985-2011: Intervention example



Lane et al (2014)



Lion Quality

Issues of vertical transmission and intensive farming practices

Salmonella laying flocks in EU countries: Baseline

	EU Survey (2004-2005)
	% of Salmonella-positive layer flocks (% *S.* E and/or *S.* T)
UK	12 (7.9)
Spain	73 (52)
Poland	76 (56)
Italy	29 (7.9)
The Netherlands	15 (7.8)
France	17 (8.0)
Denmark	2.7 (1.6)

- http://www.efsa.europa.eu/en/science/monitoring_zoonoses/reports/zoon_report_finbroilers.html
- http://www.efsa.europa.eu/cs/BlobServer/DocumentSet/Zoon_report_2006_en,0.pdf?ssbinary=true

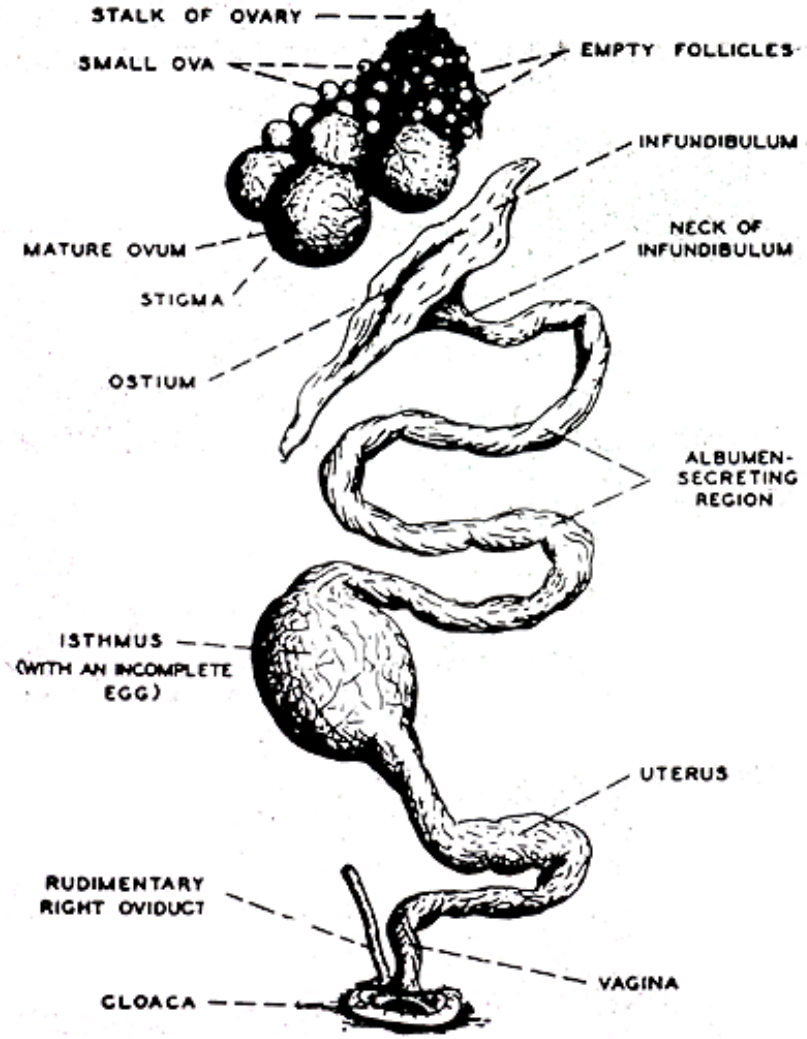
Salmonella and egg contamination

- Some Salmonella are extra-intestinal … ie the Salmonella passes from the gut into other organs, including reproductive systems

- **Mainly *Salmonella* Enteritidis in eggs**

- Persistence in reproductive tissues and enters the egg in oviduct
- Salmonella is then present in albumen or yolk
- The organism survives in eggs

- Not necessarily related to faecal carriage



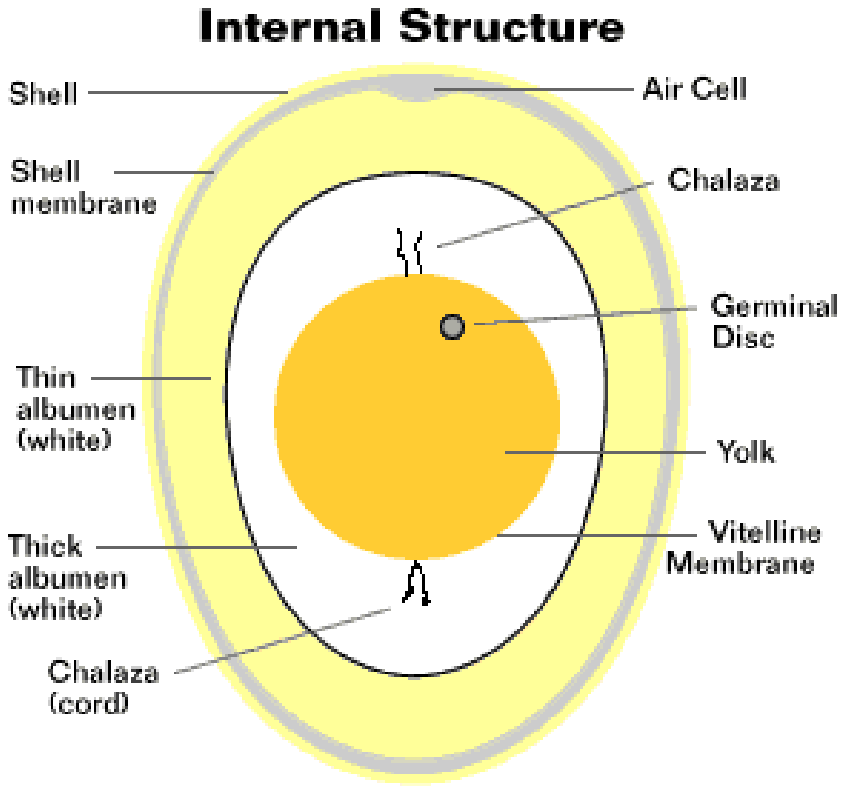
Factors influencing the growth of Salmonella Enteritidis in eggs

Few cells are deposited in the albumen.

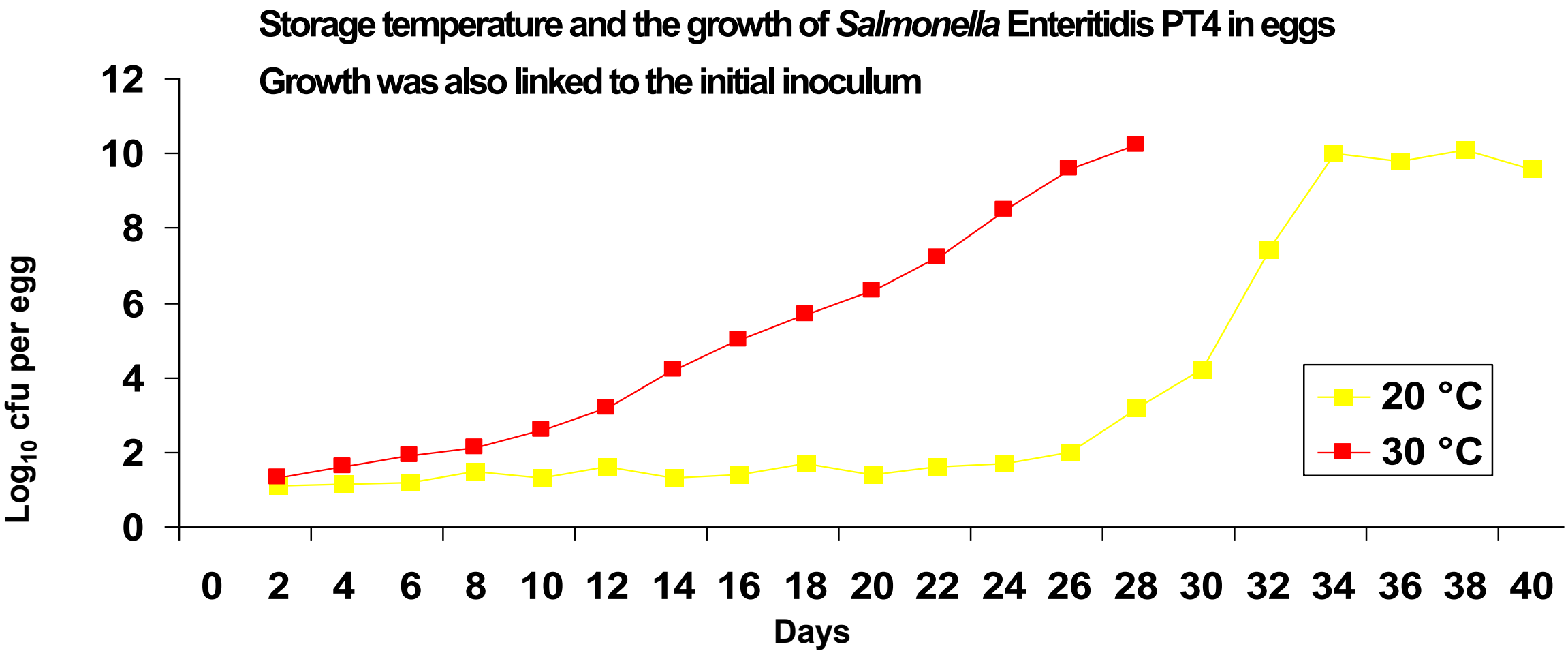
Yolk membrane breakdown accelerated by high (>20ºC) and fluctuating temperatures.

Rapid growth possible once yolk membrane has allowed the release of iron.

Contamination obvious in liquid cultures once cells >10^7/egg !



Temperature and salmonella in egg risks



Growth of Salmonella enteritidis in artificially contaminated eggs: the effects of inoculum size and suspending media.
Cogan TA, Domingue G, Lappin-Scott HM, Benson CE, Woodward MJ, Humphrey TJ
International Journal of Food Microbiology 2001 70:131-41.

Intervention – Eggs and caterers

- Strains of Salmonella enteritidis, S. typhimurium and S. senftenberg inoculated into the yolks of shell eggs were found to survive forms of cooking where some of the yolk remained liquid



- Survival was largely independent of the size of the initial inoculum.

- **Organisms were found to grow rapidly at room temperature**

The survival of salmonellas in shell eggs cooked under simulated domestic conditions. 1989. Humphrey, T.J., Greenwood, M., Gilbert, R.J., Rowe, B. and Chapman, P.A
Epidemiology & Infection, 103, 35-45.

Salmonella legislation

- The Zoonoses Regulation (EU Regulation 2160/2003) requires that the Competent Authority of each Member State sets up a **National Control Programme** (NCP) in order to meet the Salmonella reduction target set by the Commission. Defra is the CA in England and Wales.
- - The Control of Salmonella in Poultry Order (CSPO) covers breeding flocks and layer flocks and implements Commission Regulations (EC) No 1003/2005 (**breeding flocks**) and (EC) No 1168/2006 (**laying flocks**). **Sampling and testing requirements** as annex to Regulation (EC) No. 517/2011 (amending the original Regulation 1168/2006).
- The Control of Salmonella in Broiler Flocks Order (CSBO) **covers broiler flocks** and implements Commission Regulation (EC) No 646/2007 (broiler flocks)
- Regulation (EC) 882/2004 requires that those laboratories testing under the CSPO and CSBO, and are **accredited** to ISO 17025.
- For third countries to export eggs to the EU the country must implement equivalent measures (ie a *Salmonella* National Control Programme approved by the EU Commission)

Salmonella in laying flocks

- **Control programme in the UK from January 2008.**
- **Eggs from flocks with *S.* Enteritidis or *S.* Typhimurium were either heat treated or not going into the food chain from 2008.**

Regulation (EC) No. 589/2008
'best before date' (28 days from laying) applicable to shell eggs marketed as Class A eggs
Regulation (EC) No. 853/2004
'sell by date' of 21 days – i.e. table eggs can only be offered for sale to consumers up to 21 days after lay.

Both 852/2004 and 853/2004 also define specific hygiene requirements for production of eggs and egg products including covering primary production, collection, storage, transport, packing and record keeping.

Egg labelling - traceability

All eggs sold at retail level must be stamped with:

Producer Code

The Producer Code is a unique number given to the producer:
it will enable the eggs to be traced back to the farm where they originated.

Country of Origin

For eggs from within the EC letters may be used to denote the origin
E.g. UK – United Kingdom NL - Holland
For eggs from outside the EC the country name must
be given in full

Production Method

3 - cage
2 - barn
1 - free range
0 - organic

Source: https://www.egginfo.co.uk/egg-facts-and-figures/industry-information/egg-codes-and-quality



If seller has less than 50 birds there is no longer any need to stamp eggs or register with Animal Health Egg Marketing Inspectorate.
The rules concerning registration and marking only apply to hens' eggs, not to duck, goose, turkey or quails' eggs.

Prevalence of *Salmonella* Enteritidis and *S.* Typhimurium in laying flocks detected during NCP sampling in the main egg producing MS 2011-2014 (EFSA CSR Reports 2008-2014)

Country	2014	2013	2012	2011
Germany	0.59%	1.18%	1.0%	1.2%
France	1.16%	0.6%	1.4%	1.5%
Netherlands	1.09%	0.72%	1.5%	2.2%
Poland	1.91%	2.4%	2.8%	3.7%
Spain	1.18%	1.87%	2.2%	2.8%
UK	0.08%	0.07%	<0.1%	0.2%

Control programme improved safety of product in the UK.

Still - prolonged multi-country outbreaks of *S.* Enteritidis infections linked to eggs

SURVEILLANCE AND OUTBREAK REPORTS

A multi-country *Salmonella* Enteritidis phage type 14b outbreak associated with eggs from a German producer: 'near real-time' application of whole genome sequencing and food chain investigations, United Kingdom, May to September 2014





Nearly 1,500 sick from Salmonella in eggs from Poland

By Joe Whitworth on November 30, 2018

A most 1,500 people have been sickened by Salmonella linked to Polish eggs in an outbreak that has lasted more than six years and affected 18 countries.

In total, 1,412 cases are associated with the outbreak, 552 confirmed and 165

JOINT ECDC-EFSA RAPID OUTBREAK ASSESSMENT

Multi-country outbreak of *Salmonella* Enteritidis sequence type (ST)11 infections linked to eggs and egg products

8 February 2022

Abstract

On 2 September 2021, France reported an increase in *Salmonella* Enteritidis S111 infections. By 11 January 2022, 272 confirmed cases had been reported in five European Union/European Economic Area (EU/EEA) countries and the United Kingdom (UK): Denmark (n=3), France (n=216), the Netherlands (n=12), Norway (n=7), Spain (n=22), and the UK (n=12) in 2021. Two deaths were recorded in adult men. Twenty-five cases were hospitalised. Sixty cases reported consumption of eggs/egg products.

Some cases reported in France in 2021 had visited restaurants serving eggs distributed by a common supplier, Spanish Packing Centre A. The eggs originated from three Spanish farms, one testing positive for the outbreak strain. Fresh table eggs from the farms linked to the outbreak were withdrawn and redirected for use in heat-treated egg products. No other countries received eggs from the same farms via Packing Centre A during summer 2021. Therefore, the source of infection for cases in late 2021 and in countries other than Spain and France could not be established.

This 2021 outbreak is linked microbiologically to a historical cross-border outbreak reported by the Netherlands in 2019. Eggs consumed by cases in the Dutch outbreak were traced back to a Spanish farm, but it was not possible to identify an epidemiological link with the 2021 outbreak. This suggests a wide distribution of the outbreak strain that could affect the food supply chain and/or earlier steps in the production chain. There may be multiple heterogeneous sources of *S.* Enteritidis ST11, and the outbreak strain could also be circulating at other farms, inside or outside Spain.

The risk of new infections caused by the outbreak strain and contaminated eggs remains high in the EU/EEA. It is therefore important to foster cross-sectoral investigations of contaminations in the egg supply chain in countries where *S.* Enteritidis S111 has been detected.

SURVEILLANCE AND OUTBREAK REPORT

Re-evaluation of a 2014 multi-country European outbreak of *Salmonella* Enteritidis phage type 14b using recent epidemiological and molecular data



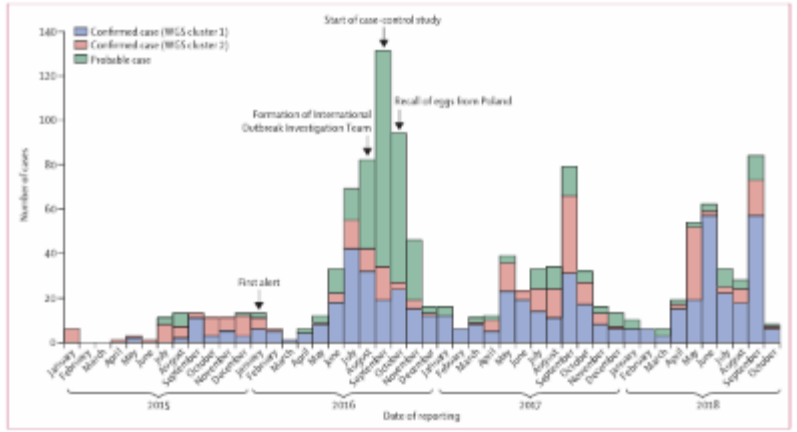


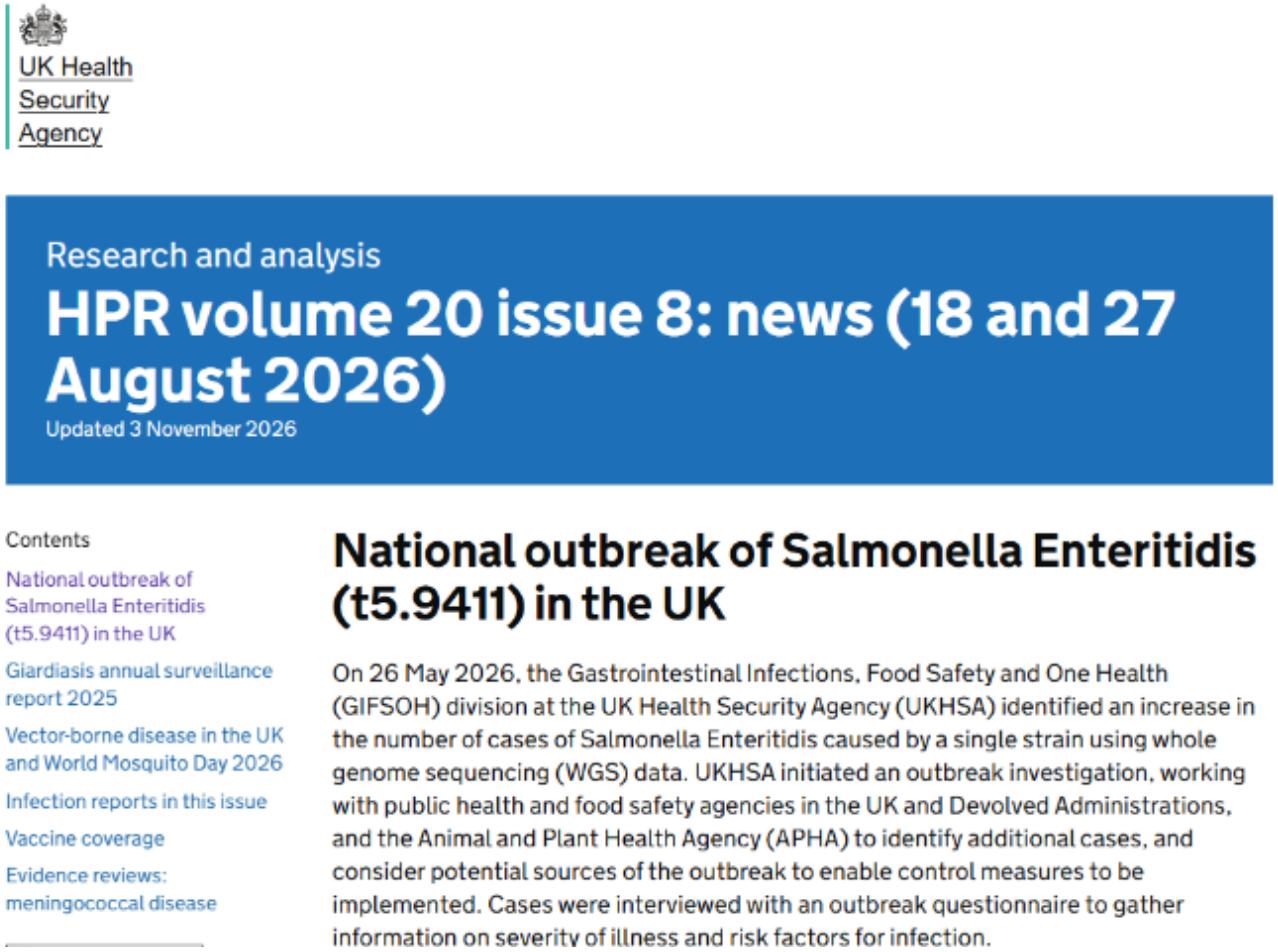
Figure 1: Number of outbreak cases by month and case classification (n=1209) in the EU and European Economic Area between January, 2015, and October, 2017



Pijnacker R, Dallman T, Tijsma A et al. **An international outbreak of *Salmonella enterica* serotype Enteritidis linked to eggs from Poland: a microbiological and epidemiological study.** The Lancet Infectious Diseases, 2019; 19, 778-786

Salmonella enteritidis t5.9411

- SE t5.9411 outbreak identified 26th May 2026



UK Health Security Agency

Research and analysis

HPR volume 20 issue 8: news (18 and 27 August 2026)

Updated 3 November 2026

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National outbreak of Salmonella Enteritidis (t5.9411) in the UK

Giardiasis annual surveillance report 2025

Vector-borne disease in the UK and World Mosquito Day 2026

Infection reports in this issue

Vaccine coverage

Evidence reviews: meningococcal disease

National outbreak of Salmonella Enteritidis (t5.9411) in the UK

On 26 May 2026, the Gastrointestinal Infections, Food Safety and One Health (GIFSOH) division at the UK Health Security Agency (UKHSA) identified an increase in the number of cases of Salmonella Enteritidis caused by a single strain using whole genome sequencing (WGS) data. UKHSA initiated an outbreak investigation, working with public health and food safety agencies in the UK and Devolved Administrations, and the Animal and Plant Health Agency (APHA) to identify additional cases, and consider potential sources of the outbreak to enable control measures to be implemented. Cases were interviewed with an outbreak questionnaire to gather information on severity of illness and risk factors for infection.

HPR: news - GOV.UK

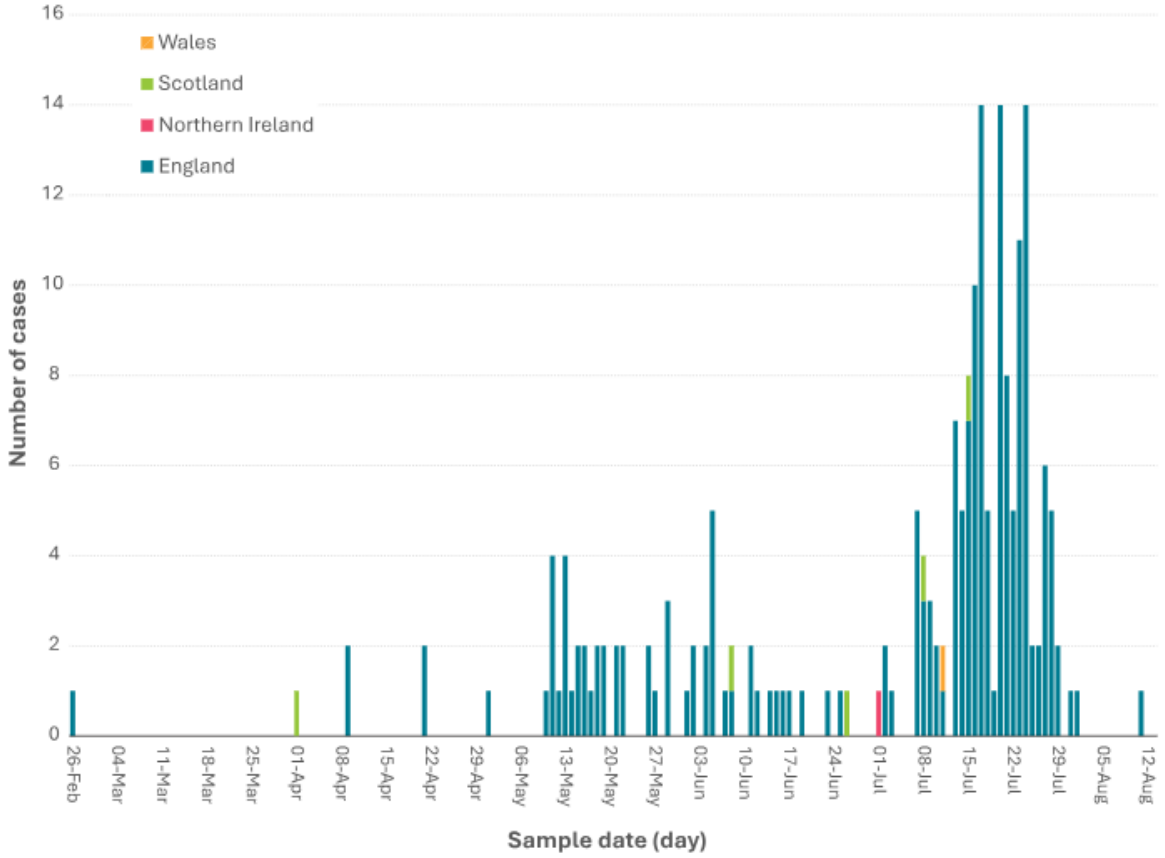
Update on outbreak of *S.* Enteritidis linked to eggs - 2026

- **By 13th August 2026 – 207 confirmed cases of t5.9411 posted in HPR**
- A few cases noted in 2025 – earliest in August 2025; – but most from May 2026 onwards
- Highest number of cases in London and Yorkshire and Humber

- **As of 13th August no identified link to UK-produced eggs or poultry.**

- FSA is liaising with local authority environmental health teams who have provided advice on food safety management to food businesses where issues have been identified.

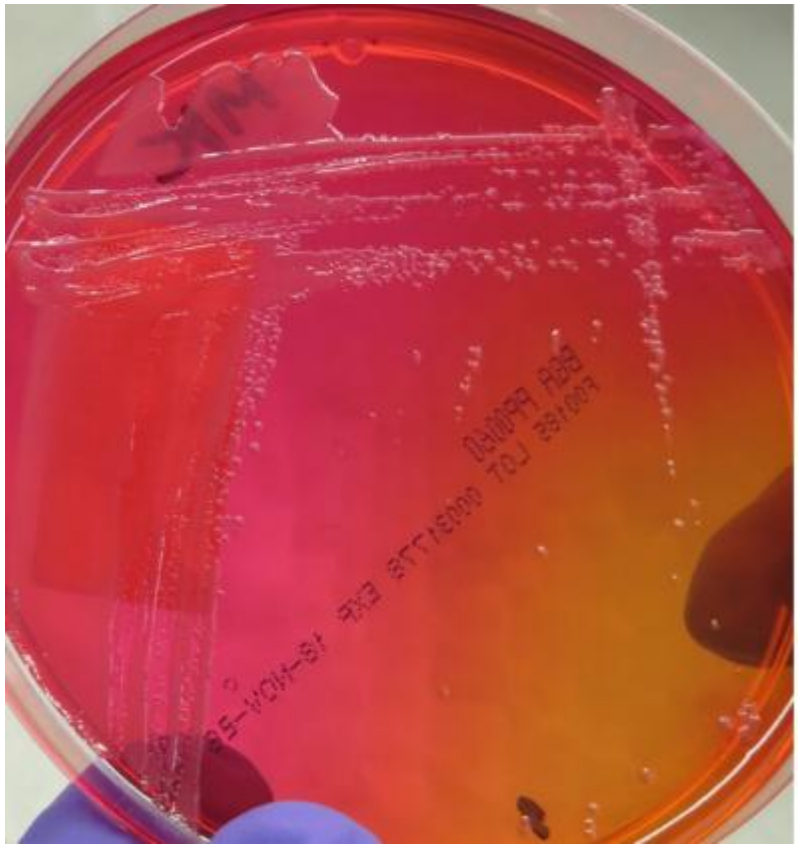
Figure 1. Number of Salmonella Enteritidis outbreak cases reported in 2026, over time, based on sample date (n=203 [note1])



HPR: news - GOV.UK

October – Thursday afternoon in the lab…at this stage we have tested imported eggs since May

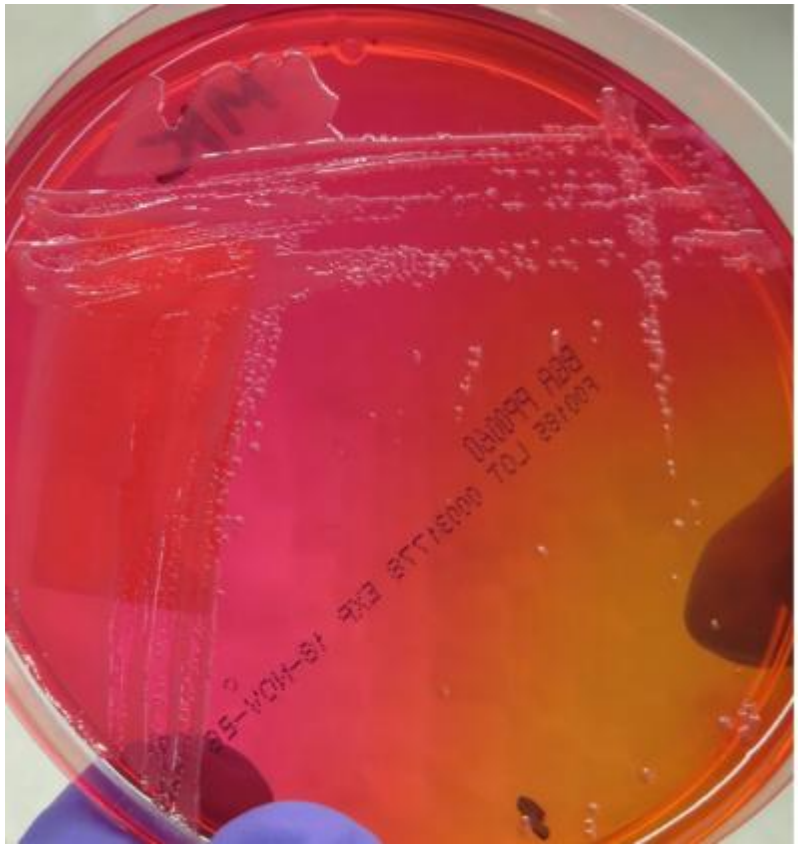
- ‘K’ says ‘some suspect salmonella colony picks appear to be pos for S. Enteritidis’
- OMG – what samples are they from?
- They appear to be eggs…(so far ~ 2500 eggs had been tested as part of the investigation)..
- WHAT eggs?
- **Apparently they are imported..from UA….**
- Please send isolates asap to reference laboratory …
- Agony while reference lab WGS results are awaited...important to do general due diligence checks on any other SE in the lab at the time – there were none….



WGS results come back

- Strain NOT matching the t5.9411 strain!
- BUT matching other cases
- Detection from imported eggs makes it relevant to ongoing t5.9411 outbreak
- Noted that eggs were imported from Ukraine….
- **Advised to send isolates asap to reference lab asap**

- Wait while reference laboratory WGS results are awaited..
- and general due diligence checks on any other Salmonella enteritidis in the lab at the time – there were none….



Update on outbreak of *S.* Enteritidis linked to eggs

UK Health Security Agency

Research and analysis

HPR volume 20 issue 10: news (29 October 2026)

Updated 29 October 2026

Contents

Salmonella Enteritidis detected in Ukrainian eggs associated with cluster of human cases (t5.8998) in England and Wales, October 2026

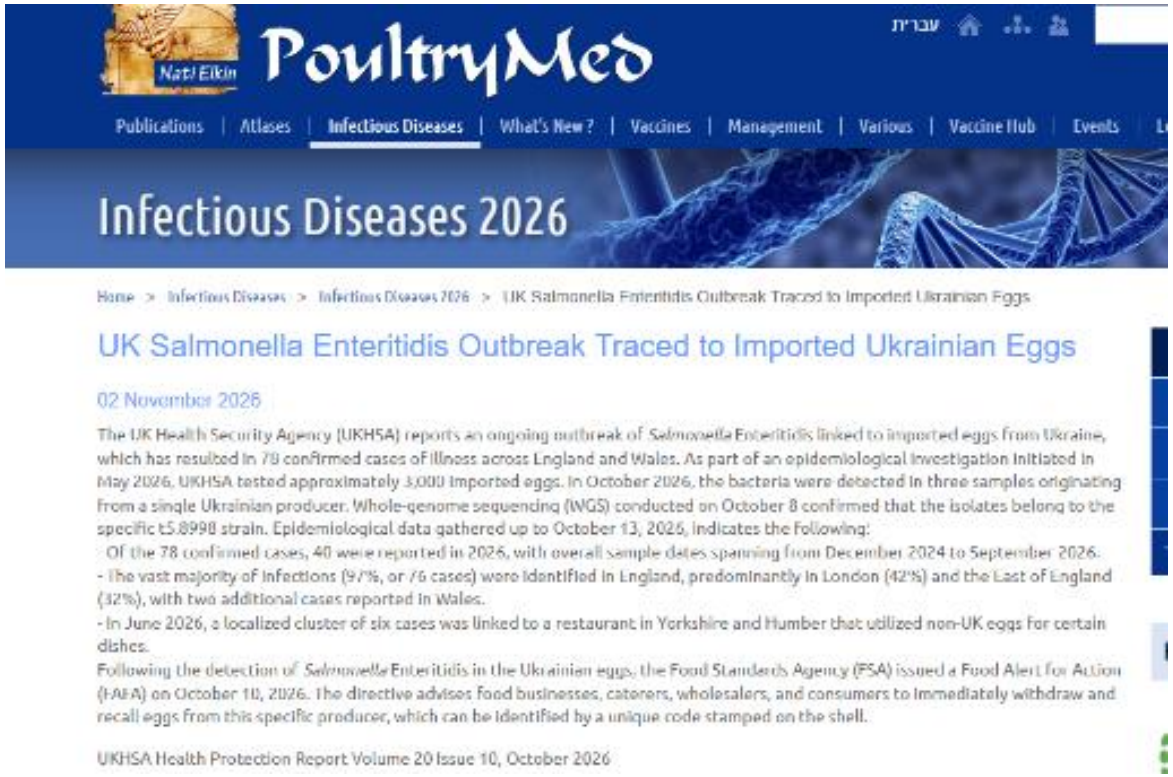
Update on the investigation of cyclosporiasis in travellers returning from Mexico

Hand, foot and mouth disease cases increase in young children

Strengthening norovirus surveillance in England and

Salmonella Enteritidis detected in Ukrainian eggs associated with cluster of human cases (t5.8998) in England and Wales, October 2026

Since May 2026, the Gastrointestinal Infections, Food Safety and One Health (GIFSOH) division at UKHSA, together with public health and food safety agencies across the UK, and Animal & Plant Health Agency (APHA), have been investigating an outbreak of Salmonella Enteritidis (SE) (t5.9411 and related clusters) associated with imported eggs. Further information on this outbreak can be found in previously published UKHSA Health Protection Reports (1-3) and Statistical Releases (4).



[HPR volume 20 issue 10: news (29 October 2026) - GOV.UK]

Salmonella enteritidis t5.9411 update published figures

As of 15 September 2026;

- a total of 355 confirmed cases and one death linked to the t5.9411 cluster in England, with sample dates ranging from 11 August 2025 to 07 September 2026
- a total of 189 confirmed cases linked to the t0.24068 cluster in England, with no deaths reported, and sample dates ranging from 27 May 2025 to 02 September 2026
- a total of 42 confirmed cases and one death linked to the t5.9765 cluster in England, with sample dates ranging from 27 January 2026 to 24 August 2026

Fewer cases have been reported over recent weeks.

Cases continue to be associated with eating at a range of food outlets, including small cafés, restaurants and takeaway businesses.

Update on outbreak of *S.* Enteritidis linked to eggs October 2026 Update

Food Alert For Action: To food businesses and consumers who have purchased shell eggs originating from Yasensvit Ltd, Ukraine, stamped with the code 3UA1012066





FOOD ALERT

Published on: 10 October 2026

England, Northern Ireland and Wales specific

Shell eggs originating from Yasensvit Ltd, Ukraine, stamped with the code 3UA1012066 should be removed from sale and not consumed because Salmonella was found in the product Food businesses and consumers should be aware that shell eggs originating from Ukraine stamped with the code 3UA1012066 on the egg may be unsafe to eat because Salmonella has been found in some of the eggs supplied by this establishment. It is possible other eggs from this establishment with egg stamp code 3UA1012066 may also be affected. All eggs with the code 3UA1012066 should be withdrawn from the market and recalled from consumers. These eggs should not be consumed.

Food Alert For Action: To food businesses and consumers who have purchased shell eggs originating from Yasensvit Ltd, Ukraine, stamped with the code 3UA1012066 - Alerts

Update on outbreak of *S.* Enteritidis linked to eggs

2.2 UKRAINE

Ukraine gained tariff free access to the UK for eggs and egg products, among other items, in May 2022 under the UK Ukraine Free Trade Agreement.

Initially scheduled to run until March 2026, this duty free access has since been extended to March 2028, allowing Ukrainian eggs to continue entering UK markets without tariffs.

In 2025, reports state Ukrainian egg producers exported 2.05 billion eggs, a 65.6 % rise compared with 2024. This strong growth was reflected across major European markets, with the EU accounting for around 73 % of total export volumes.

65.6% RISE

in Ukrainian exports in 2025 compared to 2024

8 MILLION

kilos of eggs imported from Ukraine in early 2025

Surge in shipments to the UK

According to data from the Animal and Plant Health Agency, Ukraine became one of the largest suppliers of eggs to the UK in 2025, shipping around 8 million kilograms of eggs in the first part of the year, more than supplies from Poland and Spain. The number of individual egg consignments entering the UK also grew from roughly 3,500 in 2023 to over 10,000 in 2024.

Egg exports driving domestic price inflation

The rapid growth in Ukrainian egg exports has also had implications for its domestic market. As European demand has strengthened, reports in the media and Ukrainian Government backed website *Ukraine Open for Business*, indicate that major Ukrainian egg producers prioritised higher-value export destinations such as the UK and Spain. As a result, domestic supply has tightened and retail egg prices in Ukraine rose sharply, increasing by close to 50% by mid-2025.

While tariff-free access to the UK market was intended to support Ukraine's economy, reports suggest the benefits may be concentrated among large egg producers seeking foreign currency, while Ukrainian consumers have faced rising prices and increasing pressure on domestic food affordability.

3.3 TIMELINE OF RECENT NOTABLE ISSUES RELATING TO EGGS & EGG PRODUCTS

The following chronology groups notable incidents by issue type.

Shell egg issues

SALMONELLA — SHELL EGG OUTBREAKS & RECALLS

1. **2016: Multi-country European salmonella outbreak**
   Issue type: Salmonella
   Countries affected: Poland Belgium, Denmark, Luxembourg, Netherlands, Norway, Sweden, UK

   Eggs traced to a Polish egg packing centre caused widespread cross-border infections.

2. **2021–2022: Spain-linked multi-country salmonella outbreak**
   Issue type: Salmonella
   Countries affected: Spain, France, Netherlands, UK, Scandinavia

   A major ongoing Salmonella outbreak linked to Spanish eggs resulted in 272 cases, 25 hospitalisations, and 2 deaths. Contaminated eggs were reportedly diverted to processing rather than be destroyed.

3. **2023–2025: Netherlands Salmonella outbreak linked to contaminated feed**
   Issue type: Salmonella

   Outbreak linked to eggshells from Salmonella positive flocks inadequately treated before being added to poultry feed. The outbreak, which began in the first half of 2023, resulted in 151 cases in 2023, 27 in 2024, and 31 in 2025.

4. **2024: Poland - Salmonella outbreak linked to eggs exported to UK**
   Issue type: Salmonella
   Countries affected: UK

   More than 200 cases of Salmonella reported linked to eggs imported from Poland to the UK. The FSA warned food businesses about using Polish eggs.

   FSA Head of Incidents Tina Potter stated:
   "Food businesses must maintain rigorous hygiene and sourcing practices, particularly when using imported products."

5. **2024: Sweden - major retail Salmonella egg recall**
   Issue type: Salmonella

   Major Swedish retailers ICA, Axfood and Lidl recalled eggs after salmonella detection in production environments.

6. **2024–2025: Sweden ongoing Salmonella recall linked to Ukrainian imports**
   Issue type: Salmonella

   Salmonella detected in eggs imported from Ukraine in 2024. Swedish officials continued to investigate Salmonella outbreaks linked to eggs from Ukraine through 2024 and 2025, with more than 100 cases recorded.

7. **2024: France – major Salmonella egg outbreak and recall (c. 3m eggs)**
   Issue type: Salmonella

   Millions of eggs were recalled across French distribution networks and 100 illnesses were recorded due to Salmonella contamination.

8. **2025: France - major Salmonella egg outbreak and recall (c.500,000 eggs)**
   Issue type: Salmonella

   500,000 eggs recalled across four major French retailers.

9. **2025: Belgium - Salmonella egg outbreak linked to laying farm**
   Issue type: Salmonella

   A Salmonella outbreak traced to a Belgian farm was identified as the cause of illness for 57 people who were recorded being taken ill.

10. **2025: UK – Salmonella egg outbreak linked to imported egg distributor**
    Issue type: Salmonella

    123 confirmed illnesses linked to a single imported egg distributor were reported between May – October 2025.

Update on outbreak of *S.* Enteritidis linked to eggs

Ovostar/Yasensvit ~ 7 million hens on one site

~ 1.5 billion eggs produced in 2025 – some evidence that testing for salmonella is done – but maybe immunological based –

Usually not a monitoring method that can be combined with vaccination…

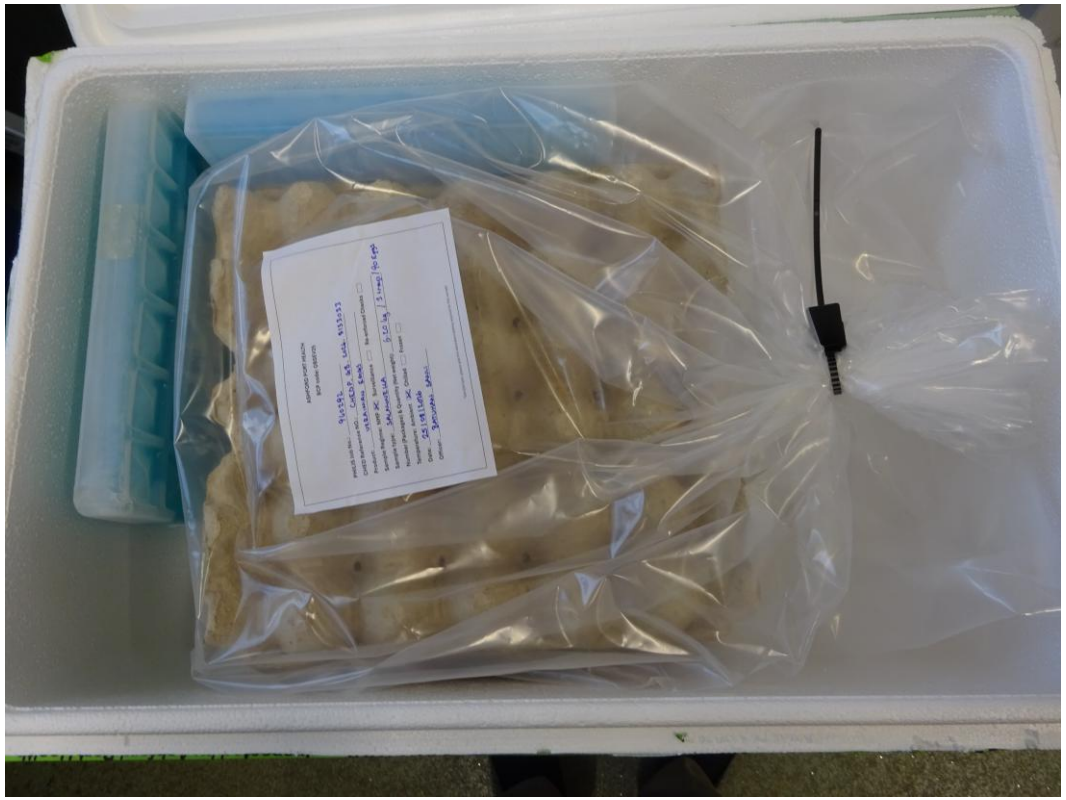


[Production - Ovostar]



Eggstremely busy FW&E Microbiology Laboratories, UKHSA, Local Authorities and other partners







FSA Guidance for Caterers

Egg safety checklist

- buy eggs from reputable suppliers
- do not accept or use damaged or dirty eggs
- follow good hygiene practices
- refrigerate eggs where possible
- do not use eggs beyond their best before date
- take extra care with raw or lightly cooked egg dishes
- always be mindful of who you're cooking for, especially if there's a risk your consumers could be vulnerable to Salmonella infection
- use pasteurised eggs, Lion Code or Laid in Britain assured eggs when serving vulnerable consumers
- keep pooled liquid egg refrigerated until use, never top up with new eggs and use on the same day
- always cook non-hen eggs thoroughly

Challenges – the chicken reservoir and food safety

- Laying hens have a long production period. (circa 65 weeks)
- Risk of persistent contamination between flocks. (and laying houses)
- Most *Salmonella* infection in poultry is sub-clinical
- Intermittent shedding and % contaminated eggs from infected flocks low – making it difficult to detect
- Vaccination alone not the answer (eliminate in breeders!)

- EH (and other agency) interventions are critical to Public Health
- Possible sample surveys ?





UK Health Security Agency

An Eggcellant Update; Salmonella egg outbreak

Thanks and Acknowledgements;
Frieda Jorgensen
UKHSA FWEMS lab.
UKHSA, GBRU
UKHSA, Bioinformatics department
UKHSA colleagues
Local Authority Environmental Health Services, FSA and others including devolved administrations, industry and other agencies

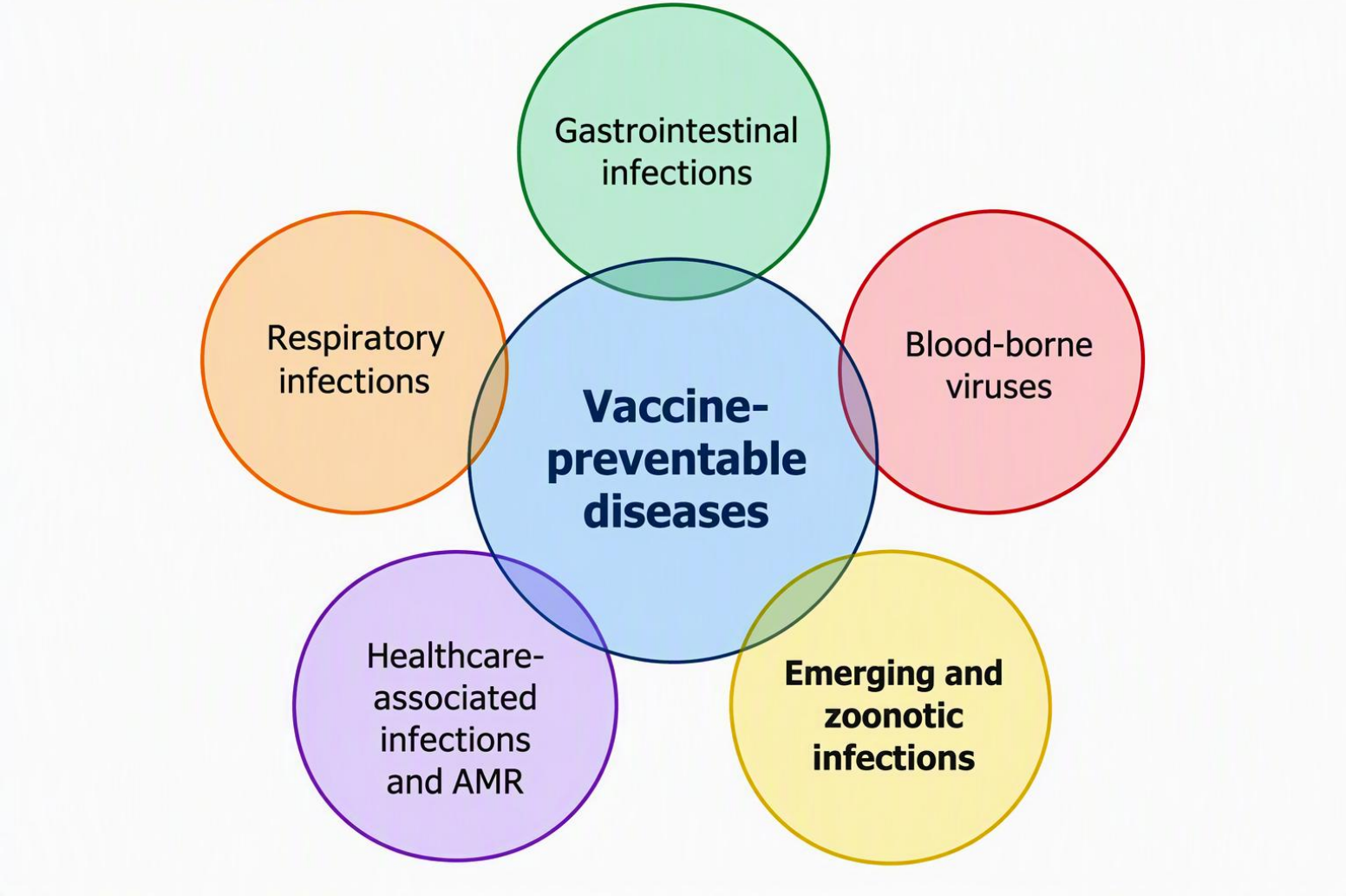
UK Health Security Agency

Duck and Cover: A human psittacosis outbreak

A case study in owning risk and uncertainty

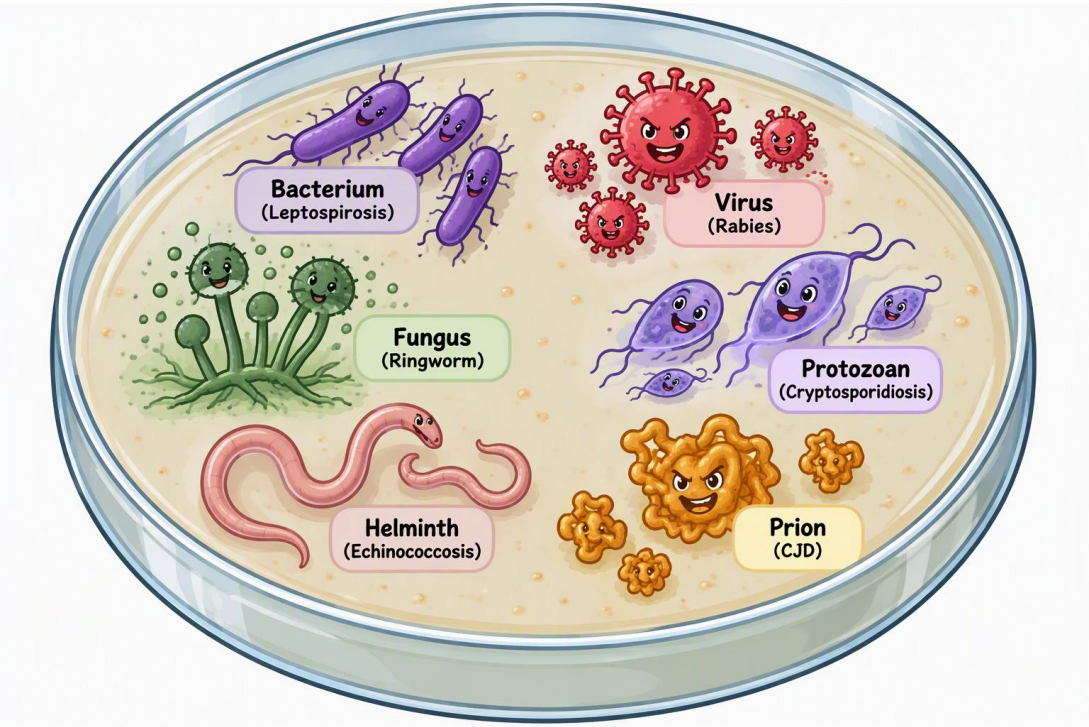


UKHSA General Topics of Infectious Diseases



Zoonoses fundamentals

1. ID naturally transmitted between non-human vertebrates and humans
2. Direct (e.g. scratch, bite, consuming animal)
3. Indirect (e.g. vector or consuming faecally contaminated water/food)
4. ID category with the *broadest* range of pathogen types and harms
5. Range of severity from mild irritation to certain death once disease manifests



High-Consequence Infectious Diseases (HCIDs) [gov.uk]

- *"Contact HCIDs*
- *Argentine haemorrhagic fever (Junin virus)*
- *Chapare virus infection*
- *Crimean-Congo haemorrhagic fever (CCHF)*
- *Ebola disease (EBOD)*
- *Lassa fever*
- *Lujo virus disease*
- *Machupo virus infection*
- *Marburg virus disease (MARD)*
- *Severe fever thrombocytopenia syndrome*
- *Airborne HCIDs*
- ***Andes virus infection** (hantavirus)*
- ***Avian influenza A (H7N9) and (H5N1)***
- *Middle East respiratory syndrome (MERS)*
- *Nipah virus infection*
- ***Pneumonic plague (Yersinia pestis)***
- *Severe acute respiratory syndrome (SARS)"*

100% HCIDs = Zoonoses

Zoonoses HP management principles

1. Human *case* management:

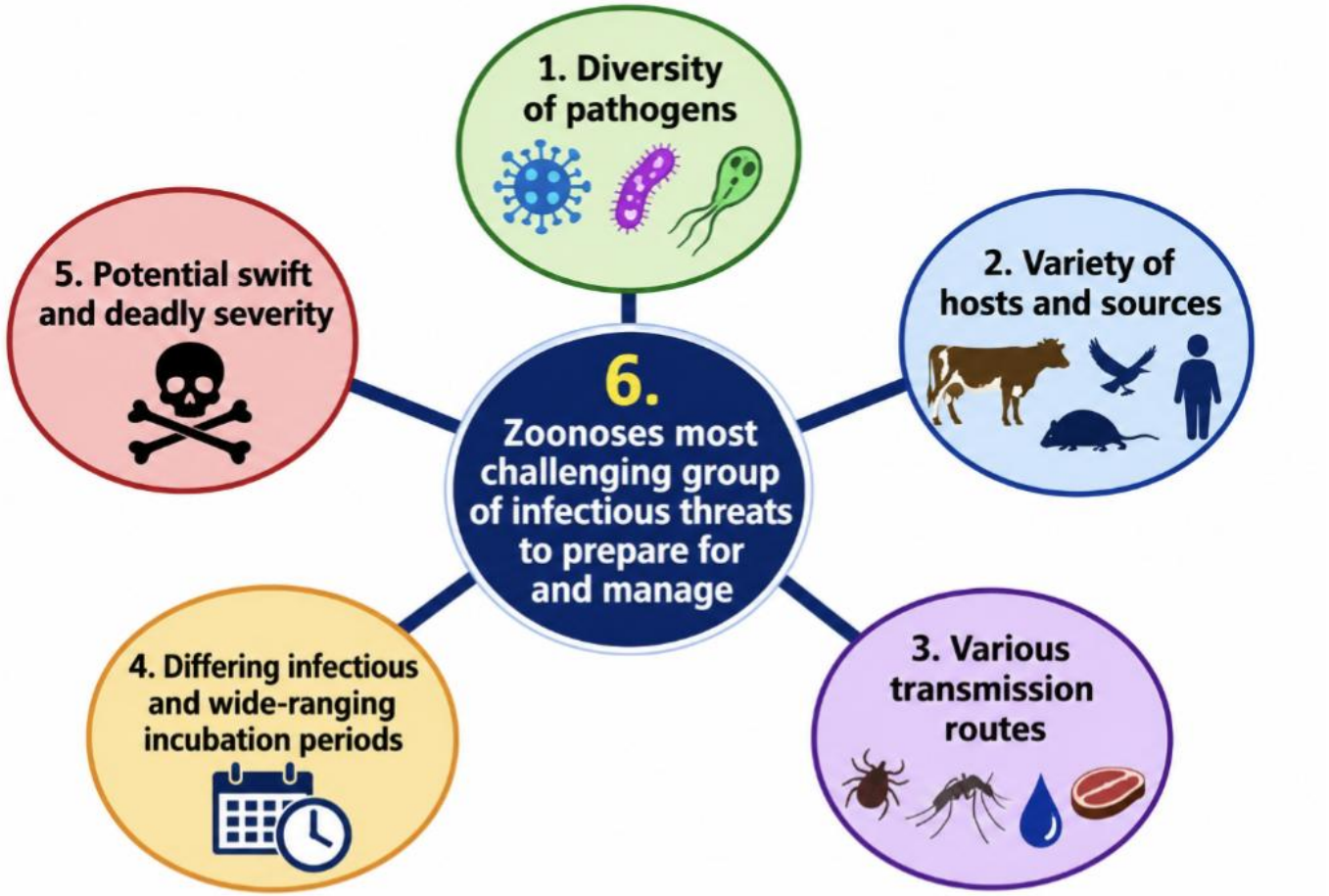
- All clinically suspected notifiable and/or micro reportable zoonoses:

1. Suspecting clinicians – clinical suspicion (symptoms/disease) (43):
(Schedule 1 - Notifiable diseases and how to report them - GOV.UK)
2.Diagnostic laboratories – micro reporting (causative agents) (74):
(Schedule 2 - Notifiable organisms and how to report them - GOV.UK)

2. Human *exposures* management to confirmed/possible/potential animal cases:

- Rabies (bats only in UK) – PEP vaccine (4 dose) and immunoglobulin (if high-risk)
- Diphtheria (dogs/cats) – PEP risk assessment, swabbing, vaccines, antibiotics
- *Brucella canis* (dogs) – PEP blood tests, managing blood donations, pet euthanasia

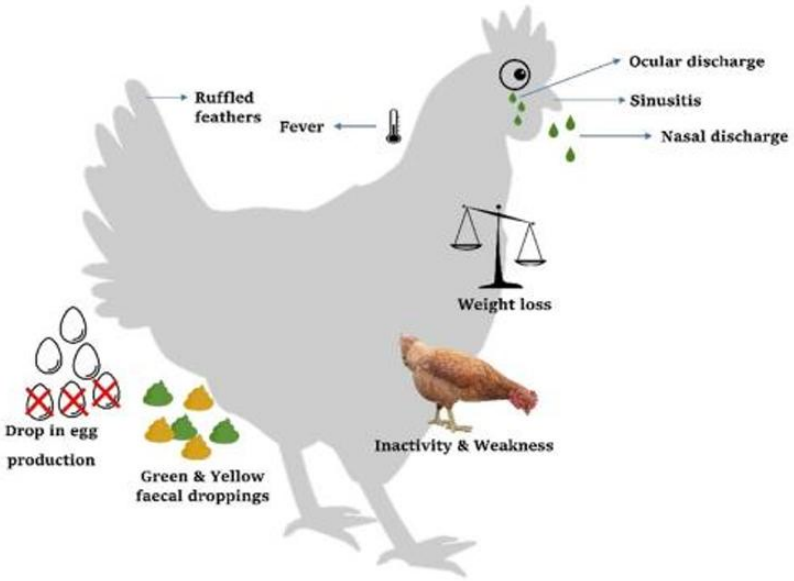
Summary

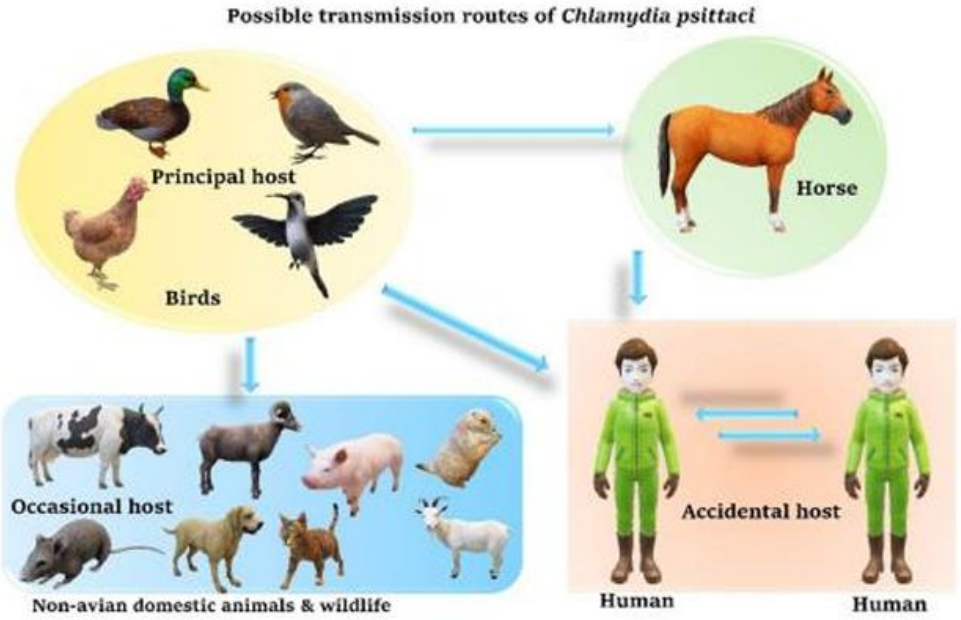

1. Diversity of pathogens
2. Variety of hosts and sources
3. Various transmission routes
4. Differing infectious and wide-ranging incubation periods
5. Potential swift and deadly severity
6.
Zoonoses most challenging group of infectious threats to prepare for and manage

Psittacosis - animals

- *Chlamydia psittaci* – bacterial pathogen
- Carried in birds (symptomatic and asymptomatic)
- **Endemic to UK**

Fig. 3 Symptoms and clinical signs in birds



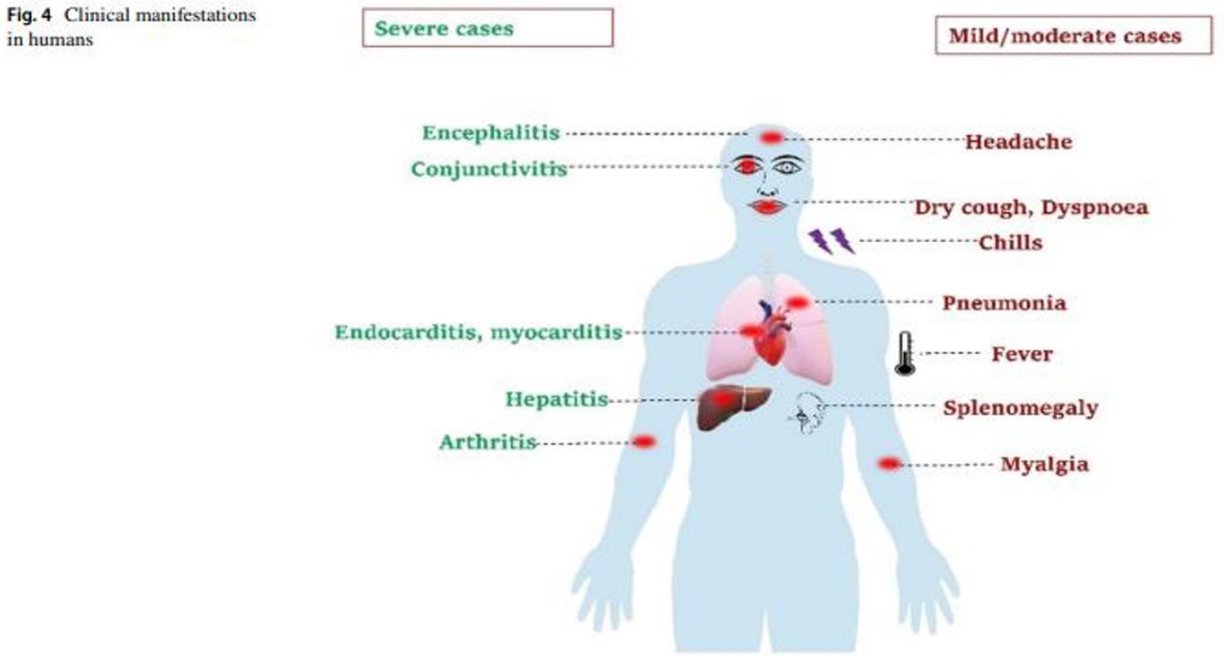


Post-mortem PPE indicated for suspected birds



Psittacosis – humans

- Bird > human transmission – ***highly*** infectious
- Human > human transmission – *possible* but lack evidence of secondary cases
- Inhalation of **dried** contaminated faeces most common infection route
- Symptoms vary in severity/stage
- Incubation: **1-4 weeks**



Epidemiology (epi) and micro reporting

- *"<10 PCR confirmed cases are reported each year in England"* Psittacosis - GOV.UK
- Not notifiable on clinical suspicion: on positive result **only**
- **But** clinical suspicion is needed to request specific test to inform so:

1. Reliance on awareness of clinician to ask patient epi' +
2. Request additional non-standard respiratory bacterial PCR test +
3. Some hospital micros (PCR) > RVBRU UKHSA (culture – and WGS) +

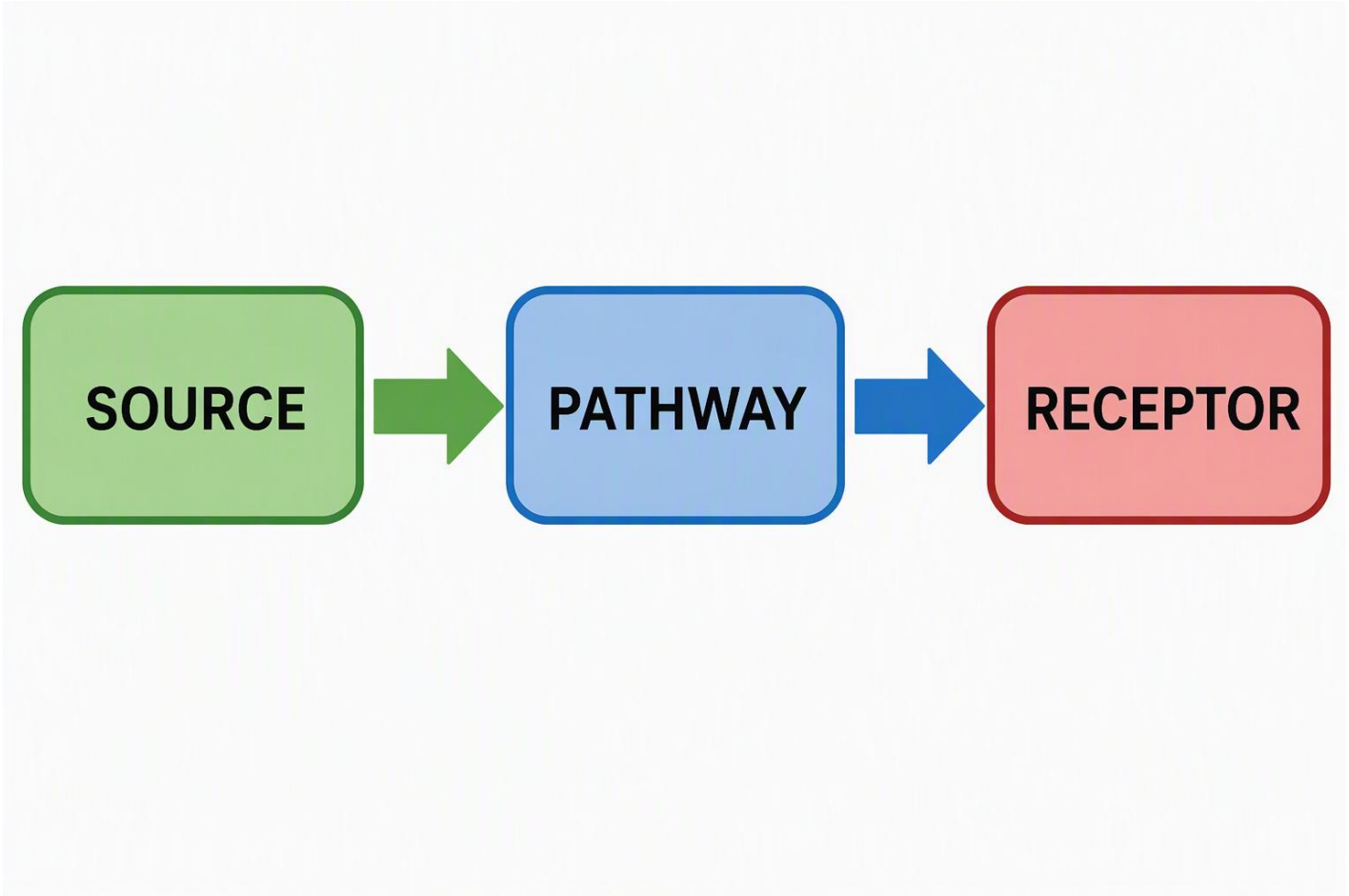
= Probable under-reporting of positive C.psittacci cases

- EM reports a disproportionately high burden of cases over recent years
- Single case investigations not routinely undertaken by HPTs/LAs

Allegation

- *2 x independent human cases of psittacosis linked to ducklings from site*
- *UKHSA identified cases on Case Management database reported by elab system (SGSS)*
- *Concern raised 2-3 weeks after diagnosis and results (PCR+) of both cases*
- *Cases connected by social media*
- *Both cases adults admitted to ICU (unclear if second case would pull-through)*
- *Question advice on managing suspected ducks still in their possession*
- *Initiated same day with Animal & Plant Health Agency (APHA)*
- ***EMHPT had wider/ongoing HP concerns/risks from setting***

Transmission (single and outbreak) model



Generic outbreak management questions

1. Pathogen characteristics vs scenario – *compatible?*
2. Sufficient evidence (micro and epi) to link infection to:

a. Setting/product?

b. Both persons?

3. Are proportionate mitigation steps in place to reduce/remove ongoing infection risk?
4. What are the indicated and extent of HP actions for persons already exposed?
5. What clinical management and testing for those symptomatic exposed?
6. What criteria needed to monitor the status and determine the end of an outbreak?

Do we have the necessary answers to Qs to inform all potential actions or to indicate over?

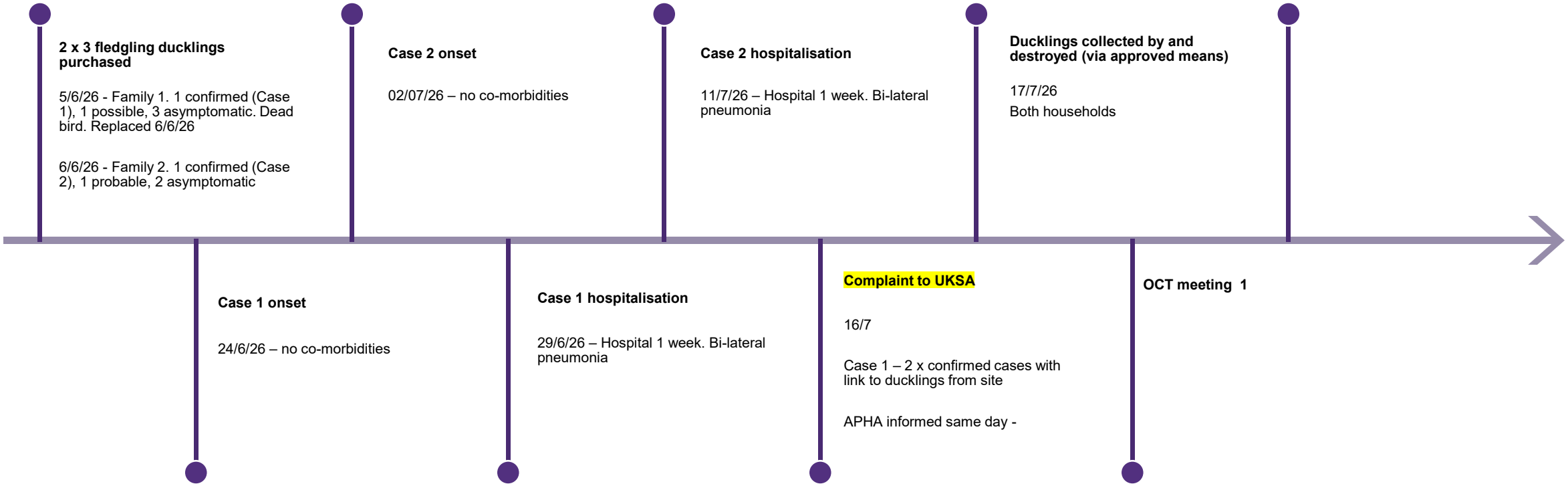
Scenario

Case	1	2
Age/Sex	35y/Female	29y/Female
Co-morbidities	None	None
Result	**PCR – only**	**PCR -only**
Place/date of purchase	5/6/26	6/6/26
Date of onset (case)	24/6/26	2/7/26
What birds purchased	3 x ducklings (**pre-fledge**)	3 x ducklings (**pre-fledge**)
Symptoms (birds)	1 x died. Collected 6/6/26	None
Possession status	Collected 17/7/26	Collected 17/7/26
Last contact with birds	17/7/26	17/7/26
Other bird exposures	Yes – 6 x chickens (separate)	No
Contact between cases	Facebook friends – **never met**	Facebook friends – **never met**
Family members symptomatic?	Yes – husband/recovered – children remain well	Yes – husband/recovered – children remain well

Pathogen characteristics vs scenario – compatible?

- Discussions with human cases
- Healthy immunocompetent cases – severe disease
- PCR - no culture > no WGS
- Ducklings are same age, similar purchase date – **Same batch**?
- **Onset within 4 weeks or purchase**
- **No** physical/indirect contact between cases
- Last contact with suspected birds 2 weeks ago (at time of call)
- Housing and cleaning status of pre-fledge birds:
- **Kept inside, cleaned out 3 x day, gloves no facemask, lots of flapping**
- Assisted only by husband – children limited contact?
- **No aftercare advice or customer details**
- **Case 2 only tested for C.psittaci when contacted by case 1 whilst in ICU**

Timeline


2 x 3 fledgling ducklings purchased
5/6/26 - Family 1. 1 confirmed (Case 1), 1 possible, 3 asymptomatic. Dead bird. Replaced 6/6/26
6/6/26 - Family 2. 1 confirmed (Case 2), 1 probable, 2 asymptomatic
Case 1 onset
24/6/26 – no co-morbidities
Case 2 onset
02/07/26 – no co-morbidities
Case 1 hospitalisation
29/6/26 – Hospital 1 week. Bi-lateral pneumonia
Case 2 hospitalisation
11/7/26 – Hospital 1 week. Bi-lateral pneumonia
Complaint to UKSA
16/7
Case 1 – 2 x confirmed cases with link to ducklings from site
APHA informed same day -
Ducklings collected by and destroyed (via approved means)
17/7/26
Both households
OCT meeting 1

Revisit the generic outbreak questions

1. Pathogen characteristics vs scenario – *compatible? YES.*
2. Sufficient evidence (micro and epi) to link infection to:

a. Setting/product?

b. Both persons?

3.Are proportionate mitigation in place to reduce/remove ongoing infection risk?

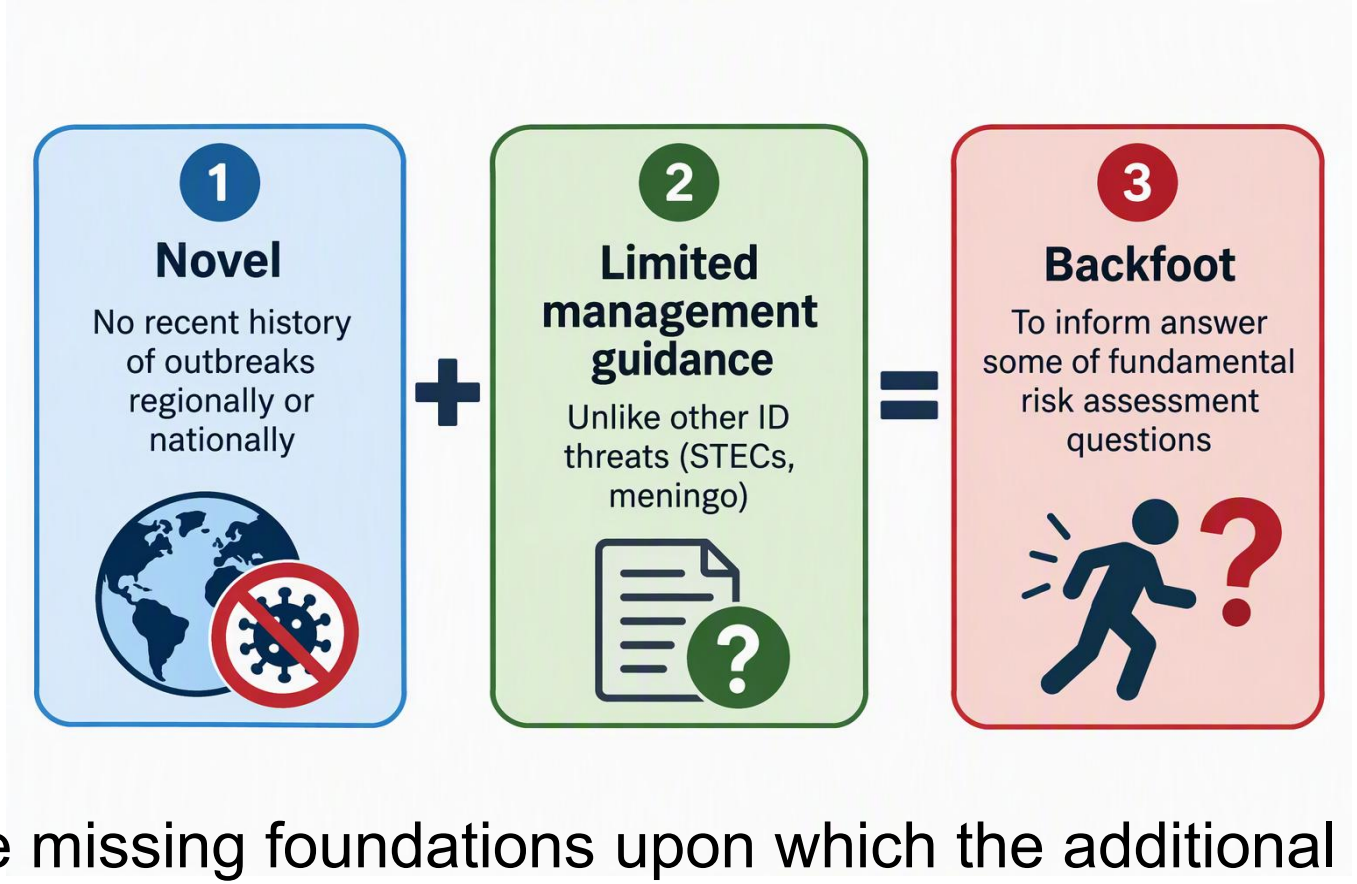
4.What are the indicated and extent of HP actions for persons already exposed?

5.What clinical management and testing for those symptomatic exposed?

6. *What criteria needed to monitor the status and determine the end of an outbreak*

Do we have the necessary answers to Qs to inform all potential actions or to indicate over?

Additional challenges



These are the missing foundations upon which the additional answers build.

Who may support with answers?

1. **APHA** – biosecurity and conformance with animal regs helps:

Insight into compliance history and the scope and size of business activity:

- Food?
- Feed?
- Primary production?

Consideration to extent of animal/human safety regulations and regulating services

2. **Environmental Health (LA)** – local knowledge and H&S jurisdiction
3. **National Zoonoses Team (UKHSA)**– Specialists in zoonotic threats

- Further investigations
- Additional human health precautions for exposed/symptomatic

Outbreak Control Team – Meeting 1

- **Primary (non-food) producer**
- Registered bird keeper (legal requirement)
- APHA lead on control measures under Psittacosis (or Ornithosis) Order 1953
- Manage biosecurity standards and **serve restriction notices pending compliance**
- 800-1000 birds – Recent unrelated audit – generally compliant biosecurity
- 1 x APHA staff **symptomatic**
- APHA to visit and restrict same-day. **Sampling to be undertaken** – inform restrictions
- Legalities extend to practices to minimise risk of transmitting disease between animals
- **No traceability or customer aftercare requirements**
- **C.psittacci is endemic** (wild and captive birds)
- agreed that HSE not LA - **lead regulatory H&S authority (HASWA and COSHH)**

1 HP actions **review and advise IPC and PPE** on farm **(UKHSA on behalf of HSE)**

2 Provide **safety netting advice to exposed for remainder of incubation**

3 UKHSA to request testing (and how) of symptomatic staff

- Reconvene another meeting after APHA visit

Site and workplace safe systems of work



Supporting information to potential exposed

1) Staff
2) Family

UK Health Security Agency

East Midlands Health Protection Team
Seaton House
City Link
NG2 4LA

Tel: 0344 225 4524
www.gov.uk/ukhsa

Dear Sir/Madam,

UKHSA reference: 201394062
Re: Possible Psittacosis exposure

You are receiving this information due to reports received by UKHSA that you may have had contact with birds/environment contaminated with *Chlamydophila psittaci*, the bacteria that causes the disease psittacosis in animals and humans. Investigations are ongoing.

Psittacosis is an uncommon disease in humans, psittacosis is uncommon in the UK, with around 50 cases each year in England and Wales.

It is transmitted from birds to humans by breathing in aerosols or dust of contaminated material, *e.g.* dried faeces or feathers. Alternatively, infection may be oral, usually via infected plumage or feathers. Only brief exposure to infected material is required for infection. Psittacosis is not spread from person-to-person, generally.

Control

The following control measures reduce the risk of infection:
- There should be good ventilation in bird housing
- New or sick birds should be kept isolated
- Bird cages should be cleaned regularly, to prevent faeces drying out
- Cleaning procedures should avoid creating aerosols and dust, *e.g.* high-pressure jet washing should not be used
- Suitable protective clothing should be worn, *e.g.* when removing dried faeces or in poultry processing plants
- If possible, evisceration lines in poultry processing plants should be enclosed with local exhaust ventilation (LEV).
- A suitable disinfectant should be used.
- Good occupational hygiene practices should be followed, particularly washing hands with soap and warm water.

1

Symptoms

The incubation period (between infection and symptom onset) is 1–4 weeks.

Symptoms are often flu-like, with fever, headache, muscle ache and respiratory tract symptoms, although the disease can progress to severe pneumonia and other non respiratory health problems.

Additional resources: Psittacosis - GOV.UK

Anyone with these symptoms and who may have been in contact with infected birds should consult their GP (111/999 if symptoms are severe) and take this information with them. Antibiotic treatment is available.

Yours sincerely,

East Midlands Health Protection Team
UK Health Security Agency
Emhpt@ukhsa.gov.uk
0344 225 4524

2

Outbreak Control Team – Meeting 2

- Movement restriction notice **in place – undefined period**
- Minor biosecurity and husbandry improvement advice given
- samples taken for **C.psittacci PCR testing** inform restriction
- Some sick/dead birds – not tested (not exceeding expected background levels)
- Keeper has published reason for closure on website **voluntarily**
- **Keeper has agreed to commence with traceability and providing after-care precautions**
- No additional reported human C.psittaci cases. **Staff member swab C.psittaci not-detected.**
- Safety netting advice provided to customers and staff for remainder of incubation
- **Proportionate IPC and PPE provided to staff (HSE informed for info/action)**
- **As endemic pathogen no additional human health actions possible**
- Await outcomes of the environmental samples to determine if restrictions warranted

Sample results



Outbreak Control Team – Meeting 3

- Sample results – **strongly positive**

- Sampling inform/justify the movement restrictions

- No clear plan as to what additional animal health actions would relinquish restrictions

- APHA looked to UKHSA for support given this decision could impact human health

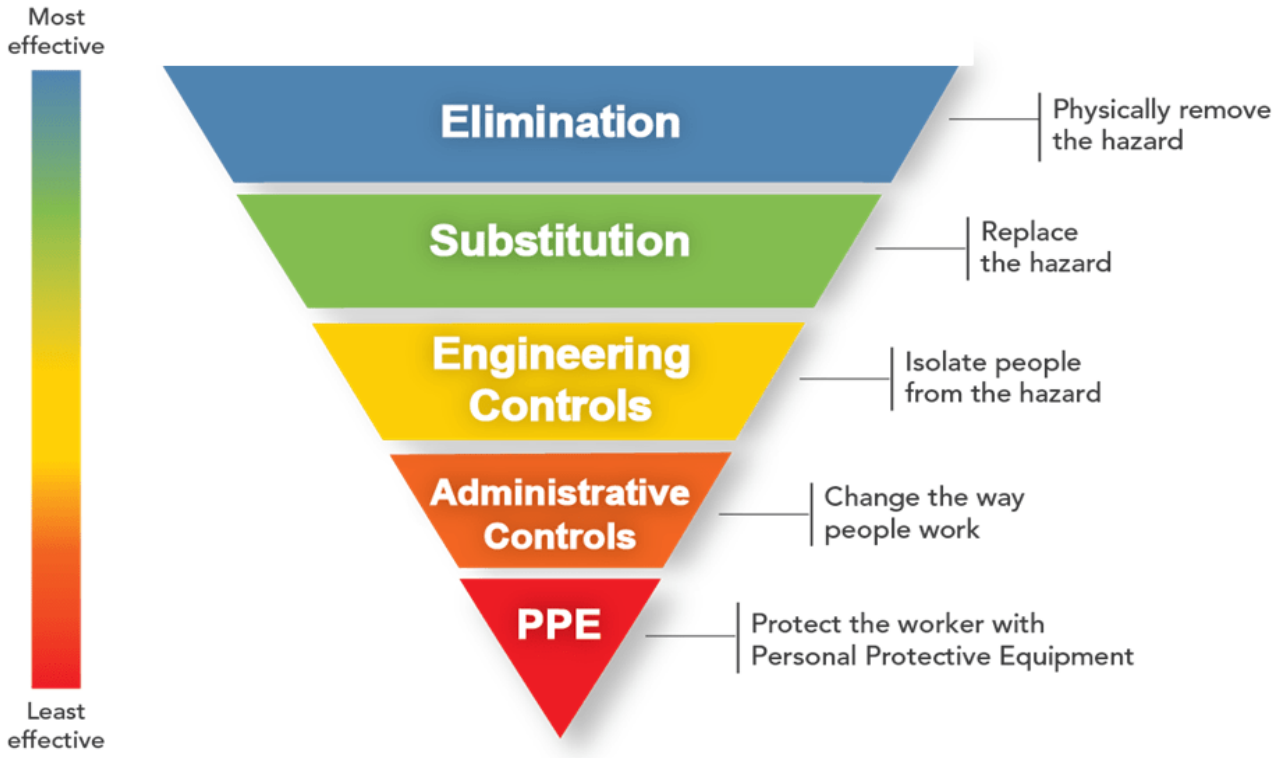
- UKHSA EMHPT had already agreed actions based upon guidance irrespective of results

- Divide in opinion about interpretation of purpose of how to use results?

- **Were previously agreed public health actions sufficient?**

Dilemma – Hazard management hierarchy





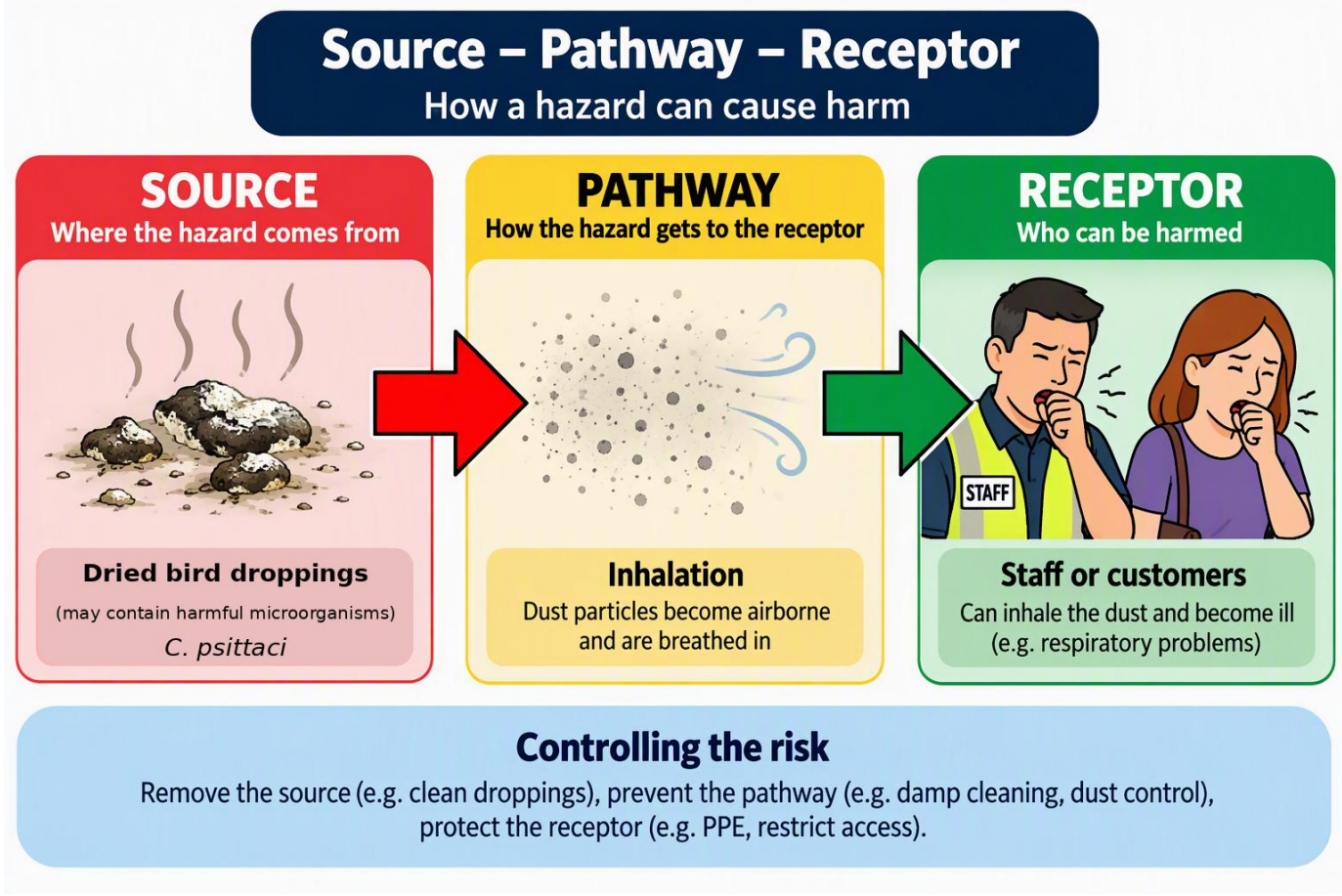
Hazard management strategies

	1. Attempt Eradication	2. Attempt Mitigation
Pros	Significantly reduce bacterial load Reduce reliance on less reliable controls	Robust application mitigate risks from ongoing exposures Maintains business survival
Cons	Cull all birds in positive pens Avoidable animal Risk business survival Likely widespread environmental contamination/carriage reinfection to previous levels likely **Unlawful?**	Requires universal behavioural compliance with key controls (PPE, safer cleaning techniques, ventilation etc) Risk reduction is unlikely universal to all depending on appreciation

Key details in rationalising ongoing risk

- **Higher dust exposure (degree of contact, ventilation, proximity) at home**
- Staff at setting remain well despite not wearing indicated PPE
- PCR result is telling but as a highly sensitive test is not quantifiable
- Generally compliant levels of animal husbandry/biosecurity
- Owner adopted voluntary precautions and after-care advice that are not required legally
- **No additional complaints nor case reporting**
- Culling would be all-or-nothing without guaranteeing recolonisation at **significant** cost
- Culling is not routinely indicated for C.psittaci control (unlike avian flu, BSE, Foot&Mouth)
- **ENDEMIC** – captive birds in contact with wild have ongoing risk of C.psittaci infection

Outcome agreed



Proposed post-sale aftercare sheet

1. Legal Requirements

Since 1 October 2024, it is a legal requirement for anyone keeping poultry in England and Wales to **register with the Animal and Plant Health Agency (APHA)**, regardless of the number of birds. Registration must be completed within 30 days of becoming a keeper.

- **Online:** GOV.UK Poultry Registration Service
- **Assistance:** Contact APHA Customer Registration Team at 03000 200 301.

2. Settling In

Moving environment is stressful. Allow your birds time to settle before expecting normal egg production. **Quarantine** new birds for at least seven days before introducing them to an existing flock. Supervise introductions carefully to manage social hierarchy issues.

> **Note on Travel Boxes:** Complimentary travel boxes are single-use only for biosecurity reasons. Please do not return them.

3. Hygiene & Safe Handling

Good personal hygiene protects both you and your flock:

- **Wash Hands:** Always scrub with soap and running water after handling birds, eggs, or cleaning equipment.
- **Dedicated Footwear:** Keep shoes strictly for the coop area.
- **No Inside Access:** Never bring backyard poultry inside your home, living areas, or kitchens.
- **Supervision:** Children should be closely supervised around birds.
- **Avoid Physical Contact:** Do not cuddle, kiss, or hold birds close to your face.

4. Housing & Biosecurity

Regular cleaning is vital. When cleaning, **lightly dampen dry bedding** before removal to reduce airborne dust. Use a **DEFRA-approved disinfectant** (e.g., Virkon™) for cleaning housing.

Biosecurity measures: Use a disinfectant foot dip at the enclosure entrance, limit visitors, and avoid unnecessary contact with other birds to reduce disease risk.

5. Health & Disease Awareness

Monitor your flock for signs of illness. If you have concerns, contact us for advice.

- **Avian Influenza:** A highly infectious viral disease. Risk to the public is low.
- **Psittacosis:** Psittacosis is a bacterial disease caused by *Chlamydia psittaci*. Although it is most commonly associated with parrots, pigeons, and doves, it can affect a wide variety of bird species, including poultry. The disease can be transmitted to humans, making good hygiene practices particularly important. Washing your hands thoroughly after handling birds or cleaning their accommodation is one of the simplest and most effective ways to reduce this risk.
- **Zoonotic Risks:** Be aware of *Salmonella* (a germ causing severe diarrhea, fever, and stomach cramps), *Campylobacter* (bacteria leading to painful stomach cramps, fever, and enteritis), and *E. coli* (certain strains can pass from bird waste into humans, causing severe stomach upset).

6. Feeding & Parasite Control

Always feed a complete poultry feed appropriate for your birds' species and age. **Strictly do not feed bread to ducks or mealworms as casual treats**; only use treats specifically formulated for poultry.

Parasite Control: Inspect perches, nesting boxes, and cracks for mites, lice, and worms during your cleaning routine. We stock a range of effective treatments.

Acknowledgement: I have read and understood the information provided in this Poultry Keeper Information Guide, including the legal requirements and health/hygiene practices.

Name: _____

Signature: _____

Date: _____

Uncertainty not just in actions but outbreak status

1. Pathogen characteristics vs scenario -yes
2. Sufficient evidence (micro and epi) to definitively link infection to:

a. Setting/product? Epi yes/rarity yes/micro no - unlikely to achieve

b. *Both* persons? Epi yes/rarity yes/micro no – unlikely to achieve

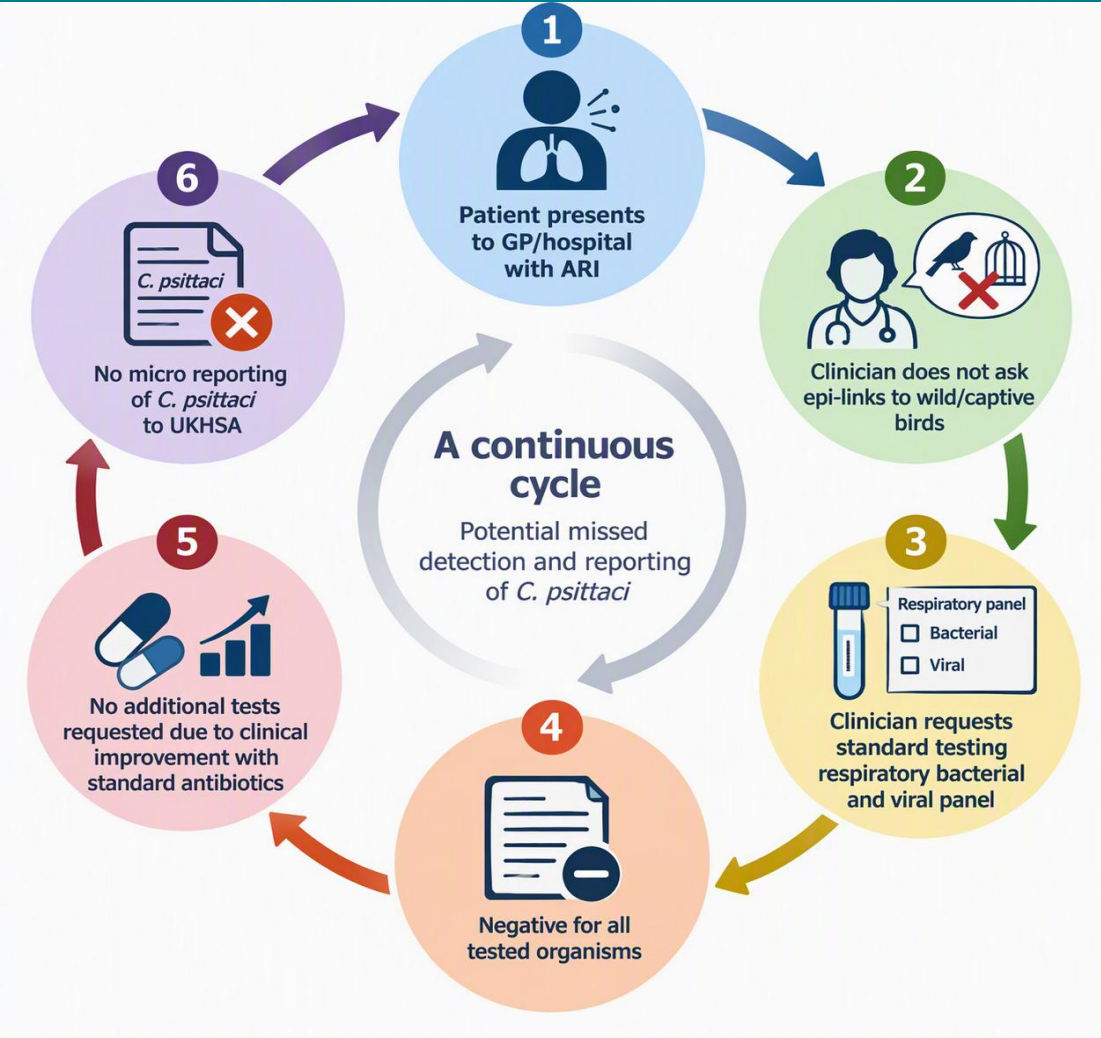
2. Are proportionate mitigation in place to reduce/remove ongoing infection risk?

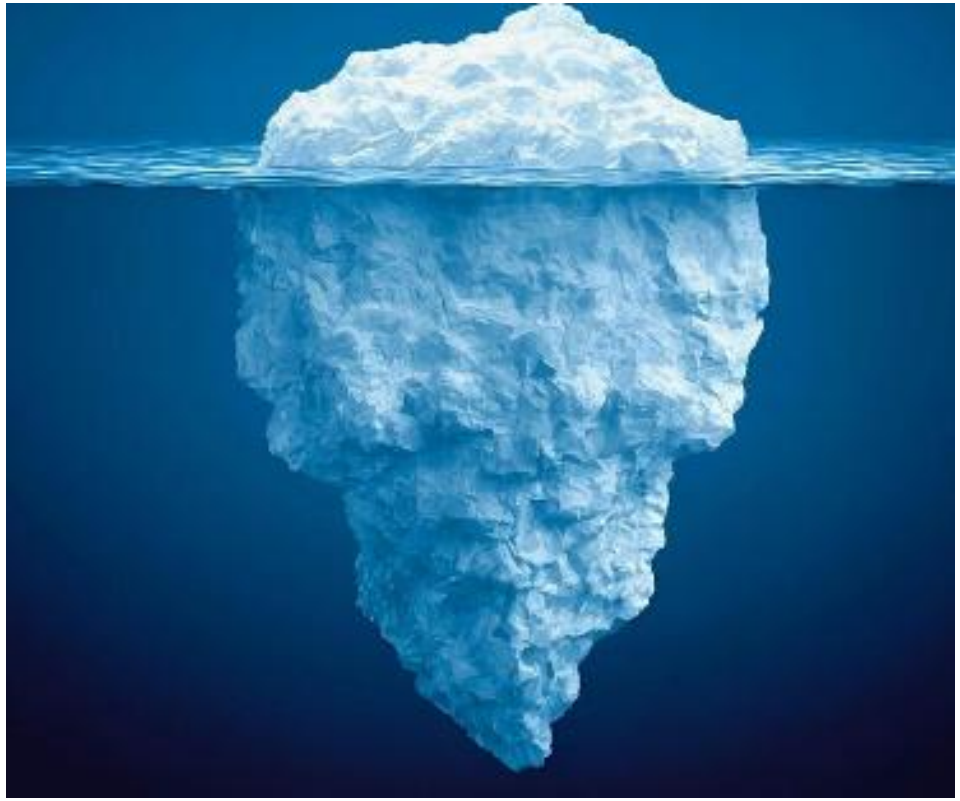
   Yes – agreed based upon guidance and OCT

2. What are the indicated and extent of HP actions for persons already exposed? – agreed
3. What clinical management for those symptomatic exposed? – agreed
4. **What criteria needed to monitor the status and determine the end of an outbreak**? – flawed

Do we have the necessary answers to Qs to inform all potential actions or to indicate over?

Rare infection or significant under-reporting?

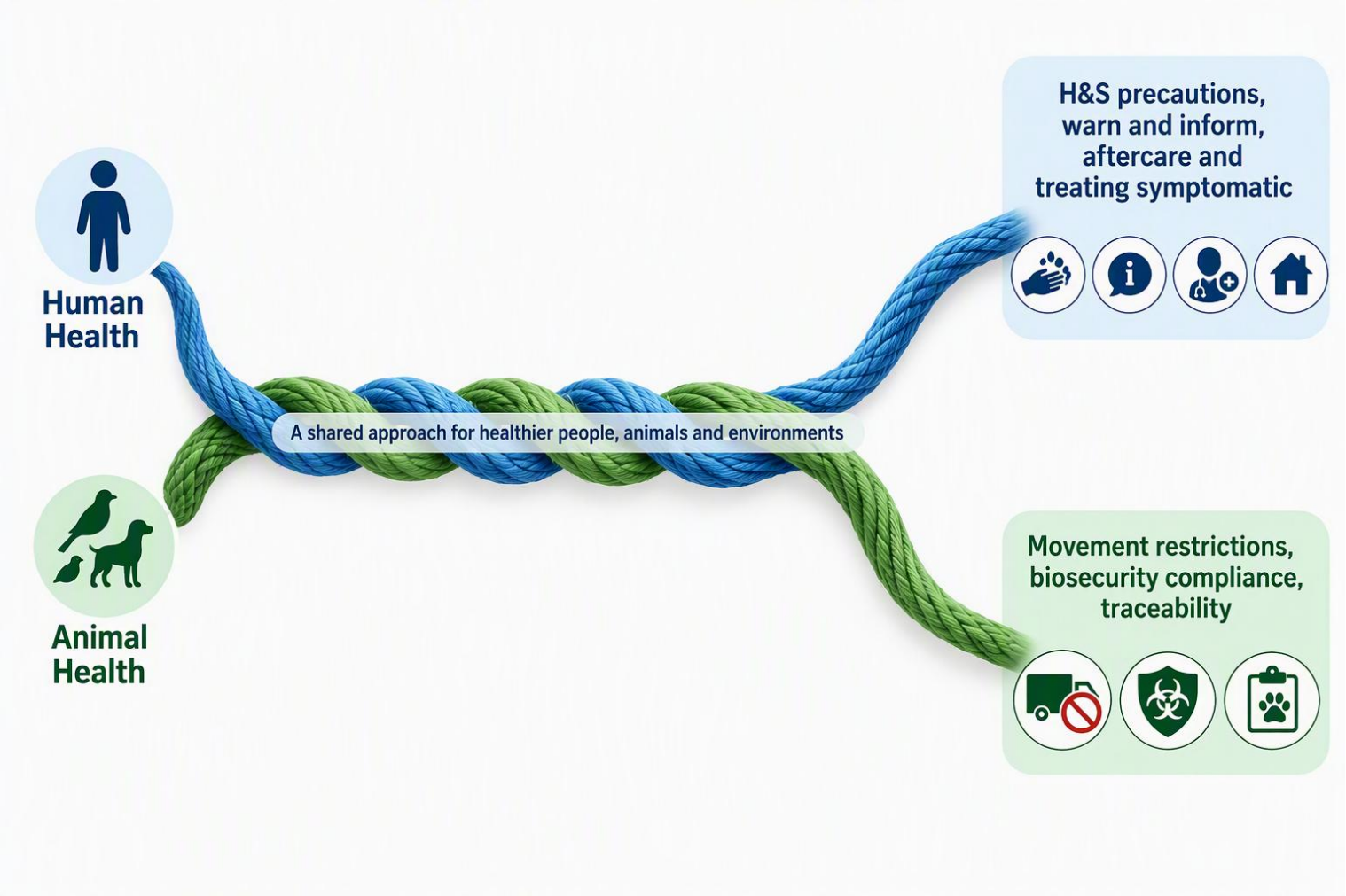




How can we be sure it's over?

Learning points

1.



Learning Points

2. Sampling is the gold standard of diagnosis – but only indicates presence status

- Interpret what sampling outcomes will tell us?

i) Inform a source/theory?

ii) Inform hazard management strategy (HMS)?

iii) Verify/monitor efficacy of management strategy?

	Legionella in a hotel shower	STEC in a sandwich production	Salmonella in baby formula	Psittacosis in a poultry holding
Source/theory?	YES	YES	YES	YES
Inform HMS?	YES	YES	YES	NO
Verify/monitor?	YES	YES	YES	NO

Questions?

We are back open as normal with a wide range of birds in stock come and see

We welcome you to visit any time we are open. We have lots of Birds and supplies all on show to come and see. No appointment is needed.