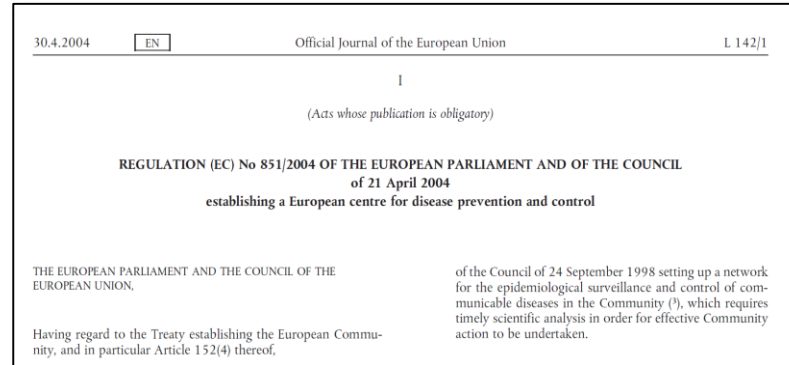


# Surveillance of infectious foodborne diseases in EU/EEA

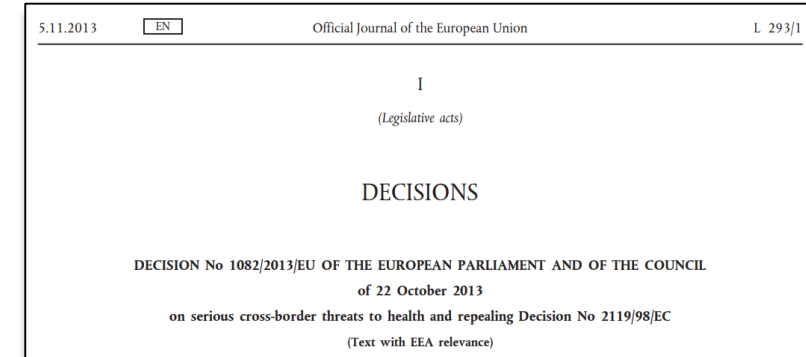
Johanna Takkinen, [Therese Westrell](#)

Conference on management of foodborne outbreaks, Vilnius, 3 October 2019

# ECDC – European Centre for Disease Prevention and Control



## Regulation on ECDC 851/2004



## Decision 1082/2013 on cross-border threats to health

- A decentralised agency of the European Union
- Located in Solna, Sweden
- Established in 2004, operational in 2005
- Staff: 280
- Mission to 'identify, assess and communicate current and emerging threats to human health from communicable diseases'

# Surveillance mandate of ECDC

- ECDC gathers surveillance data from EU Member States on 56 communicable diseases and conditions using the European Surveillance System (TESSy) and standard EU case definitions\*
- Surveillance at EU level should add value to Member States (complementary)

\* Commission Implementing Decision 2018/945/EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions

# Food- and waterborne diseases (FWD) under EU-wide surveillance

## Bacterial diseases (12)

- Anthrax
- Botulism
- Brucellosis
- Cholera
- Leptospirosis
- Typhoid/paratyphoid fever
- Campylobacteriosis
- Salmonellosis
- Listeriosis
- STEC/VTEC infection
- Shigellosis
- Yersiniosis

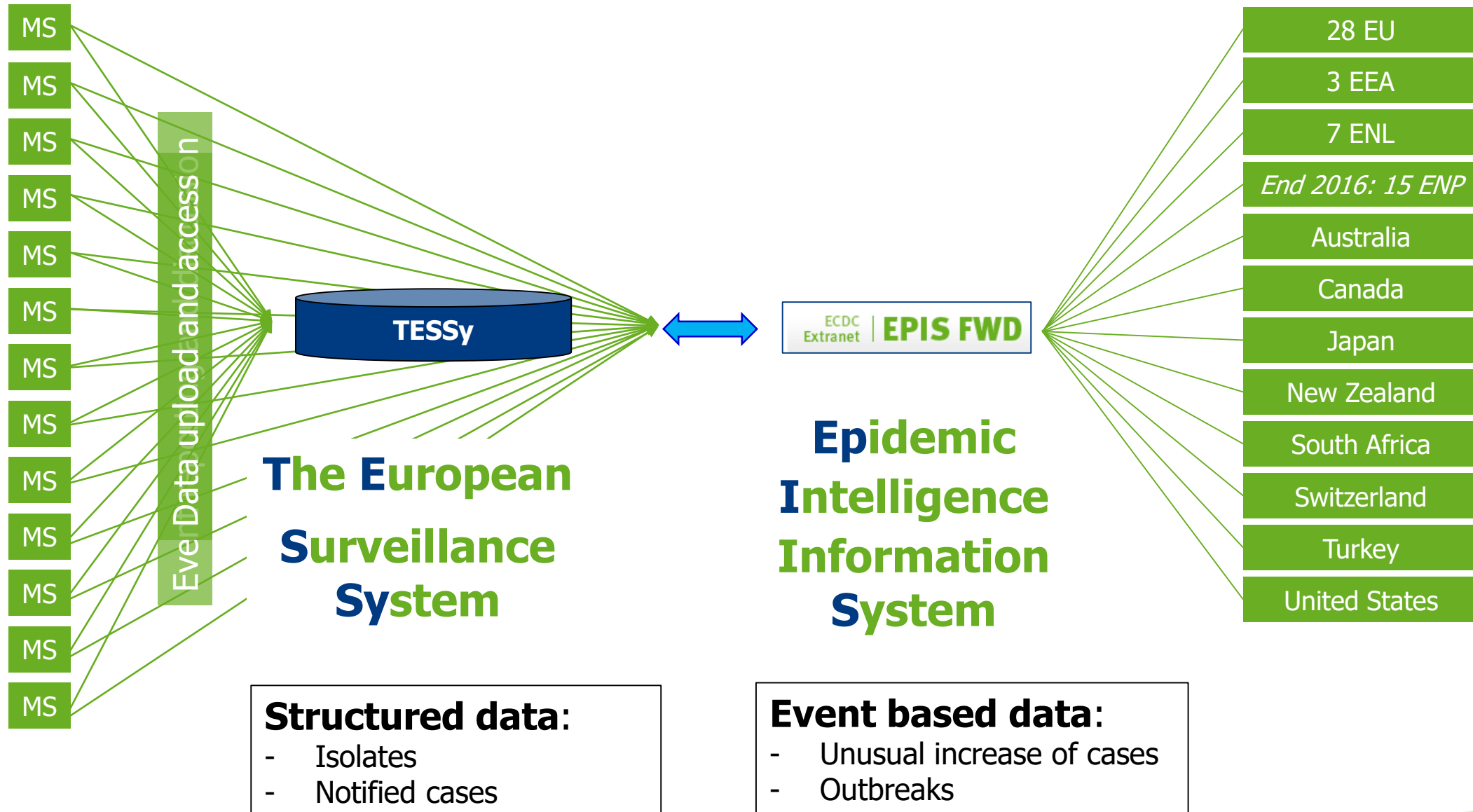
## Foodborne parasitic disease (5)

- Cryptosporidiosis
- Echinococcosis
- Giardiasis
- Toxoplasma, congenital
- Trichinellosis

## Viral infections (1)

- Hepatitis A

# Indicator-based and event-based surveillance: TESSy and EPIS



# Surveillance Atlas of infectious diseases



atlas.ecdc.europa.eu/public/index.aspx

Apps Artikel Stockholm... Billig bustransfer ti... Easy scheduling D... EUROPA Learning C... EWRS - E

ecdc **Surveillance Atlas of Infectious Diseases**

Salmonellosis Confirmed cases Reported cases 2018

Region Confirmed cases - Data quality  
Serotype ENTERITIDIS  
Serotype TYPHIMURIUM (all types)  
Serotype AACHEN  
Serotype AARHUS  
Serotype ABA  
Serotype ABADINA  
Serotype ABAETETUBA  
Serotype ABERDEEN  
Serotype ABLOGAME  
Serotype ABONY  
Serotype ABORTUSEQUI

Salmonellosis Serotype COELN Reported cases 2018

Region Resistant (R)

Reported cases  
Notification rate  
Number of deaths

Surveillance data first published in Surveillance Atlas

<https://atlas.ecdc.europa.eu/public/index.aspx>

# Surveillance Atlas example – *Salmonella* Coeln notification rate

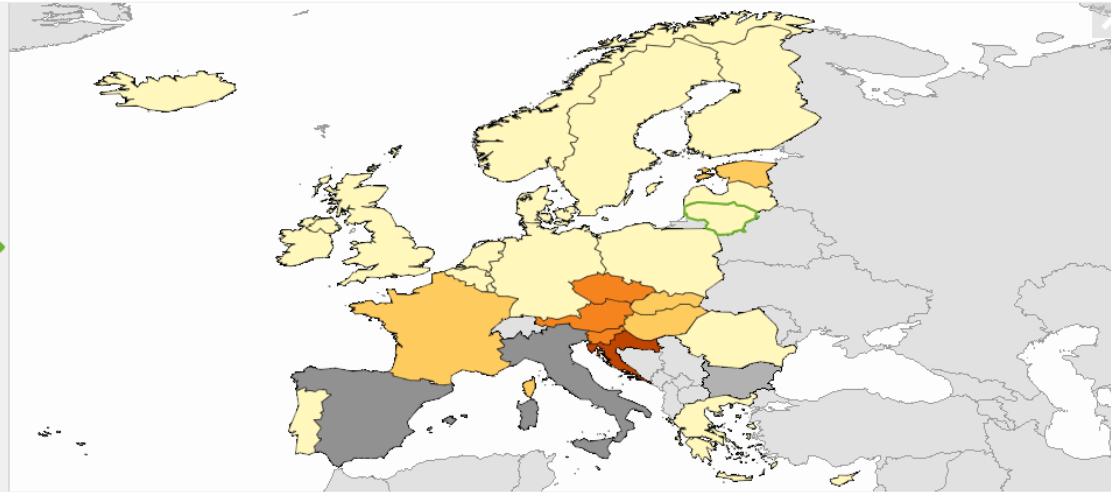


## Surveillance Atlas of Infectious Diseases

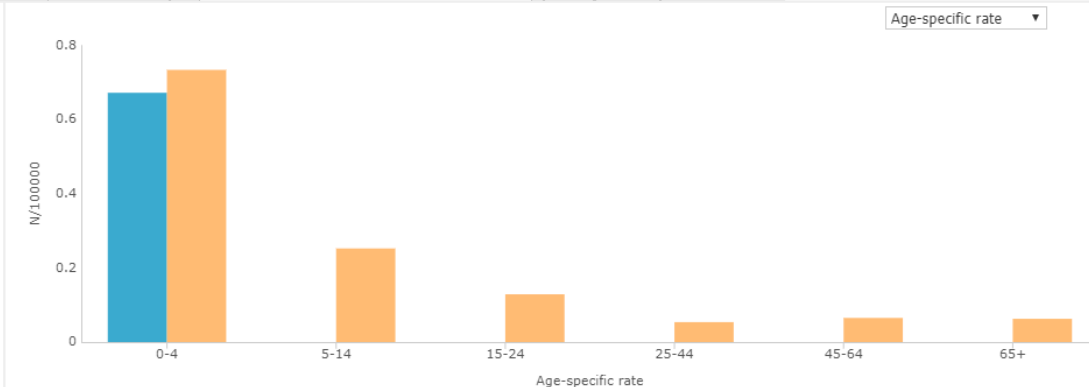
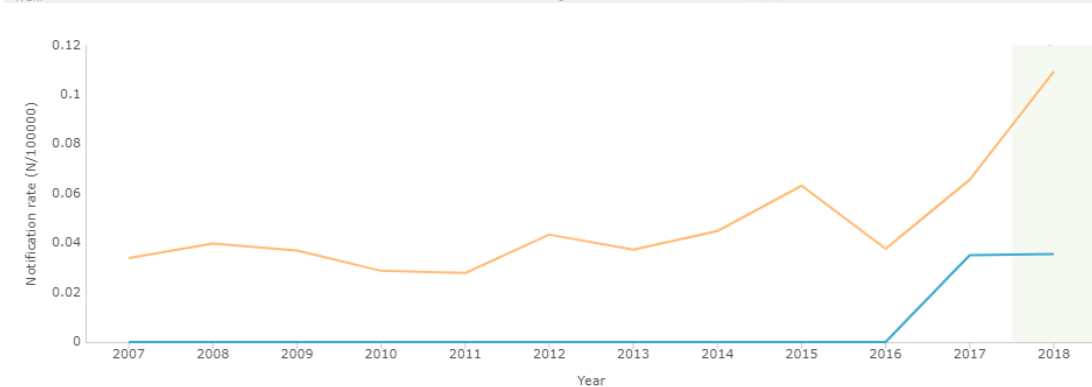
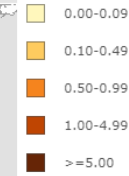
← → Salmonellosis ▼ Serotype COELN ▼ Notification rate ▼ ▶ ◀ 2018 ▶▶ ⋮



Region	Notification rate (N/100000)
EU/EEA	0.11
EU	0.11
Austria	0.79
Belgium	0.02
Croatia	1.83
Cyprus	0.00
Czech Republic	0.82
Denmark	0.09
Estonia	0.15
Finland	0.00
France	0.13
Germany	0.03
Greece	0.00
Hungary	0.12
Iceland	0.00
Ireland	0.06
Italy	



Notification rate (N/100000)

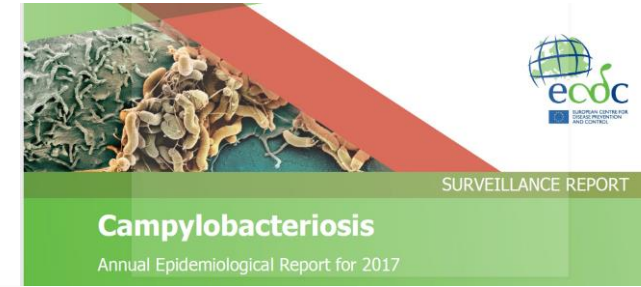


Age-specific rate ▼

■ Lithuania ■ EU



# Annual epidemiological reports



Diseases and health topics
Anthrax
Antimicrobial consumption
Antimicrobial resistance (EARS-Net)
Botulism
Brucellosis
Campylobacteriosis
Chikungunya virus disease
Chlamydia infection
Cholera

**SCIENTIFIC REPORT**

ADOPTED: 9 February 2016      PUBLISHED: 11 February 2016      AMENDED: 11 March 2016

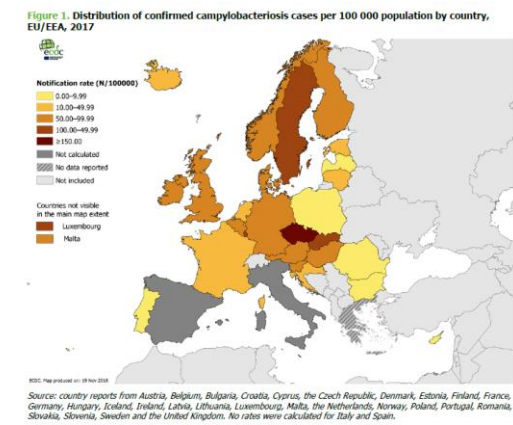
doi:10.2903/j.efsa.2016.4380

**The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2014**

Europe

100 000 population by year

Year	Rate	ADG	Reported cases
2017	12.5	64.0	7,224
2016	16.2	75.4	8,649
2015	2.7	3.0	196
2014	40.6	63.3	1,684
2013	2.3	2.3	20
2012	20.0	20.9	24,558
2011	74.5	34.9	4,225
2010	21.7	22.5	347
2009	77.8	61.4	4,289
2008	89.1	46.6	6,079
2007	83.5	94.4	69,414
2006	-	-	-
2005	79.7	54.7	7,840
2004	35.2	36.0	119
2003	54.1	57.5	2,789
2002	-	-	1,060
2001	3.0	3.0	61
2000	-	-	-
1999	34.8	35.8	963
1998	103.8	104.1	673
1997	82.1	67.7	291
1996	32.5	31.0	2,890
1995	73.9	14.4	3,884
1994	2.3	2.4	674
1993	5.9	4.9	802
1992	2.4	2.5	479
1991	127.6	130.4	7,027
1990	69.2	71.4	1,400
1989	-	-	19,860
1988	106.1	107.7	10,608
1987	96.2	106.5	52,394
1986	64.5	65.5	299,026



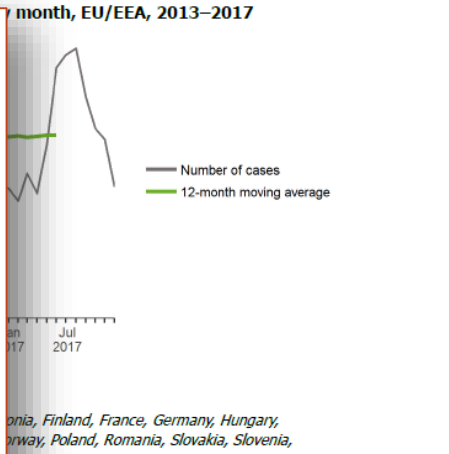
**SCIENTIFIC REPORT**

APPROVED: 2 December 2015      PUBLISHED: 17 December 2015

doi:10.2903/j.efsa.2015.4329

**The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2014**

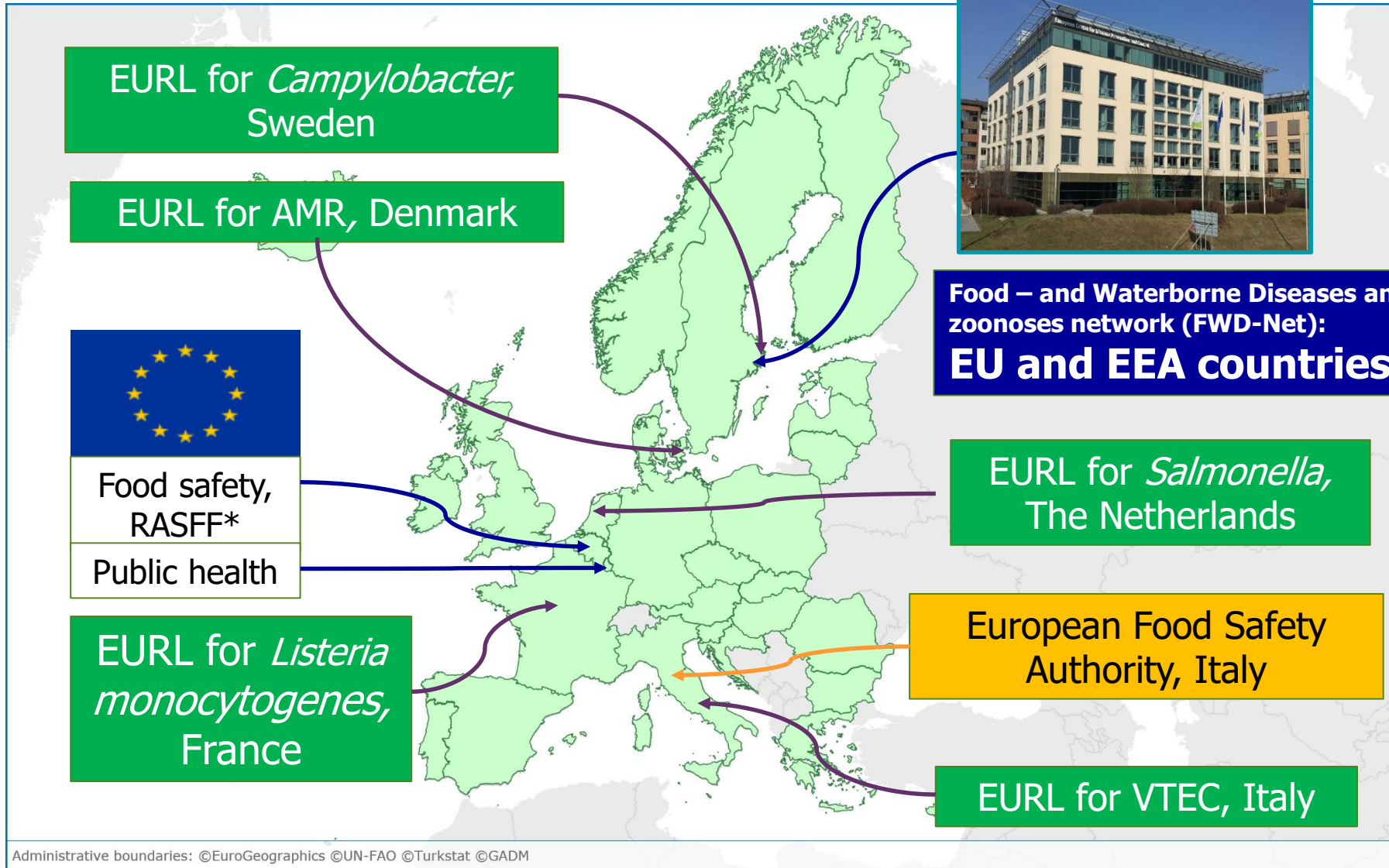
European Food Safety Authority  
European Centre for Disease Prevention and Control



<https://ecdc.europa.eu/en/annual-epidemiologi>



# EU key collaborators for surveillance of foodborne diseases



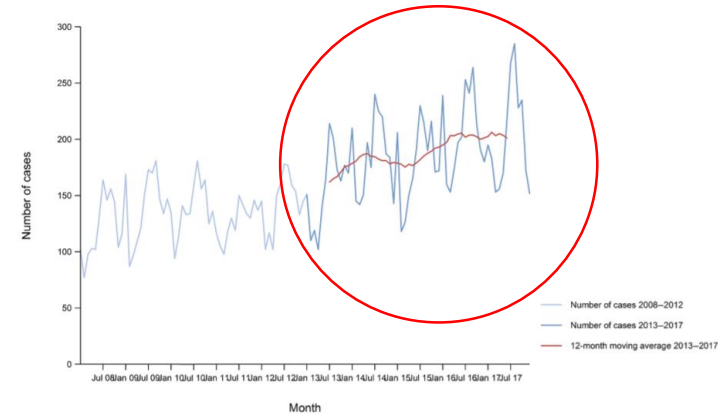
\*RASFF=Rapid Alert System for Food and Feed

# Developing EU-wide surveillance of listeriosis

# Listeriosis trend in EU/EEA

## In 2013-2017\*:

- **Notification rate** increased by **20%** from 0.40/100,000 to 0.48 / 100,000
- **Case reports** increased by **32%** (1,883 => 2,480)
- **Fatal case reports** increased by **18%** (191 => 225)



## In 2008-2015\*\*:

Significant increasing trend in

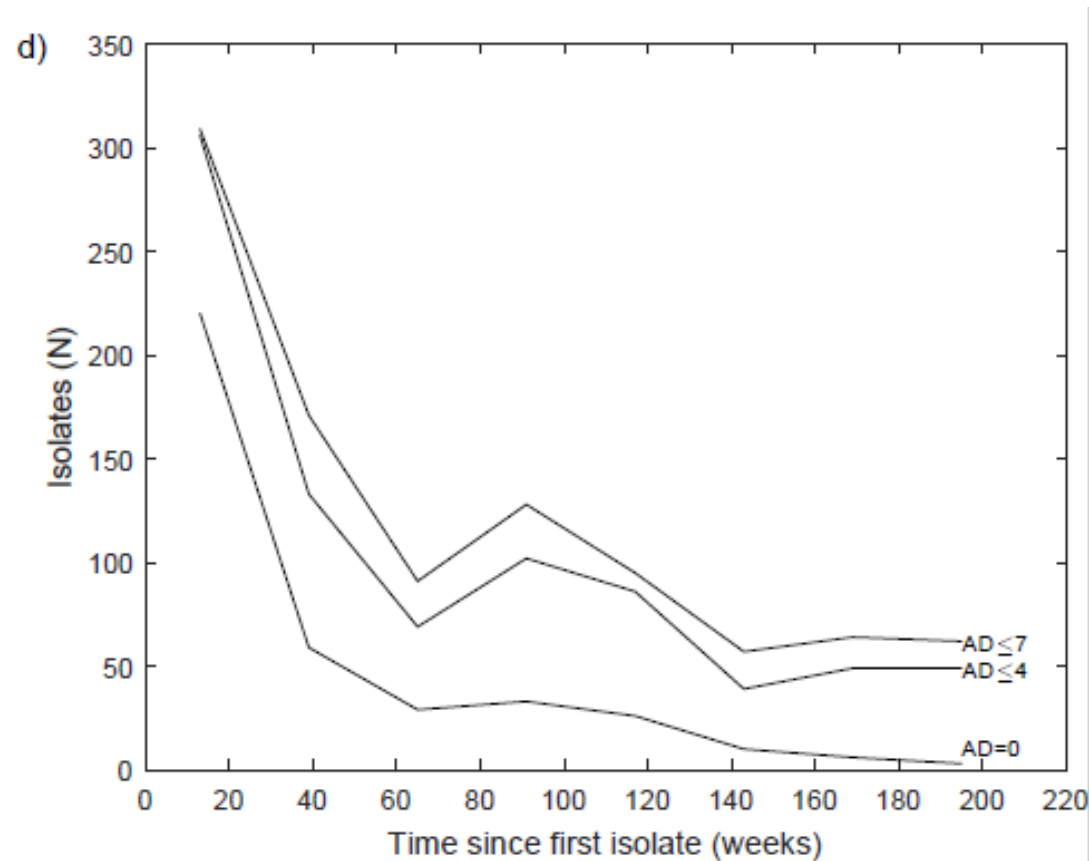
- age group > 75 years (both genders)
- females 25-44 years

Sources:

\*<https://www.ecdc.europa.eu/sites/portal/files/documents/zoonose-food-borne-outbreaks-surveillance-2017-updated.pdf>

\*\* <https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2018.5134>

# Human *Listeria* isolates in genomic clusters by AD – values (cgMLST\*), ELiTE WGS, 2010-2015



Strains may persist for several years even with identical core genome (AD=0)

\*cgMLST = core genome Multi Locus Sequence Typing

Source: [Van Walle et al. 2018. Eurosurveillance](#)

Linking public health signal of a multi-country event  
with food safety

***Salmonella* Enteritidis – example of  
ongoing multi-country outbreak  
investigation**

# *Salmonella* Enteritidis in EPIS, Jan 2016, first alert

ECDC Extranet | **EPIS FWD** Epidemic Intelligence Information System Food- and Waterborne Diseases and Zoonoses


[Home](#) [News](#) [Molecular Typing Cluster Investigations](#) **[Urgent Inquiries](#)** [Documents](#) [Users](#) [Search](#)

You are here: [EPIS](#) > [FWD](#) > [Urgent Inquiries](#) > Increase in cases of Enteritidis PT8 with MLVA profile 2-9-7-3-2 in Scotland.

## Urgent inquiry: Increase in cases of Enteritidis PT8 with MLVA profile 2-9-7-3-2 in Scotland.

### Epidemiological and microbiological information

UI ID: UI-339 | Country/ Institution/ Role: United Kingdom | Disease: salmonellosis | Pathogens: Salmonella Enteritidis

 [Display geographical distribution of cases](#)

#### ECDC Summary

22 April 2016  
Launched on 18/01/2016

- First urgent inquiry launched by Scotland in Jan 2016
- Increase of *S. Enteritidis* MLVA 2-9-7-3-2:
  - 21 cases since Aug 2015
  - Rare MLVA type
- 5 EU countries (DK, FI, NL, SE, UK) reported identification of this MLVA profile
- WGS analysis showed that some of the reported cases were linked



# S. Enteritidis 2-9-7-3-2 in EPIS FWD, Aug 2016, second alert

ECDC Extranet | **EPIS FWD** Epidemic Intelligence Information System Food- and Waterborne Diseases and Zoonoses


Home | News | Molecular Typing Cluster Investigations | **Urgent Inquiries** | Documents | Users | Search

You are here: EPIS > FWD > Urgent Inquiries > Increase of Salmonella Enteritidis (MLVA 02-09-07-03-02) in the Netherlands

## Urgent inquiry: Increase of Salmonella Enteritidis (MLVA 02-09-07-03-02) in the Netherlands

**Epidemiological and microbiological information**

UI ID: UI-367 | Country/ Institution/ Role: Netherlands | Disease: salmonellosis | Pathogens: Salmonella Enteritidis

 [Display geographical distribution of cases](#)

### ECDC Summary

12 January 2017  
Launched 25 August 2016

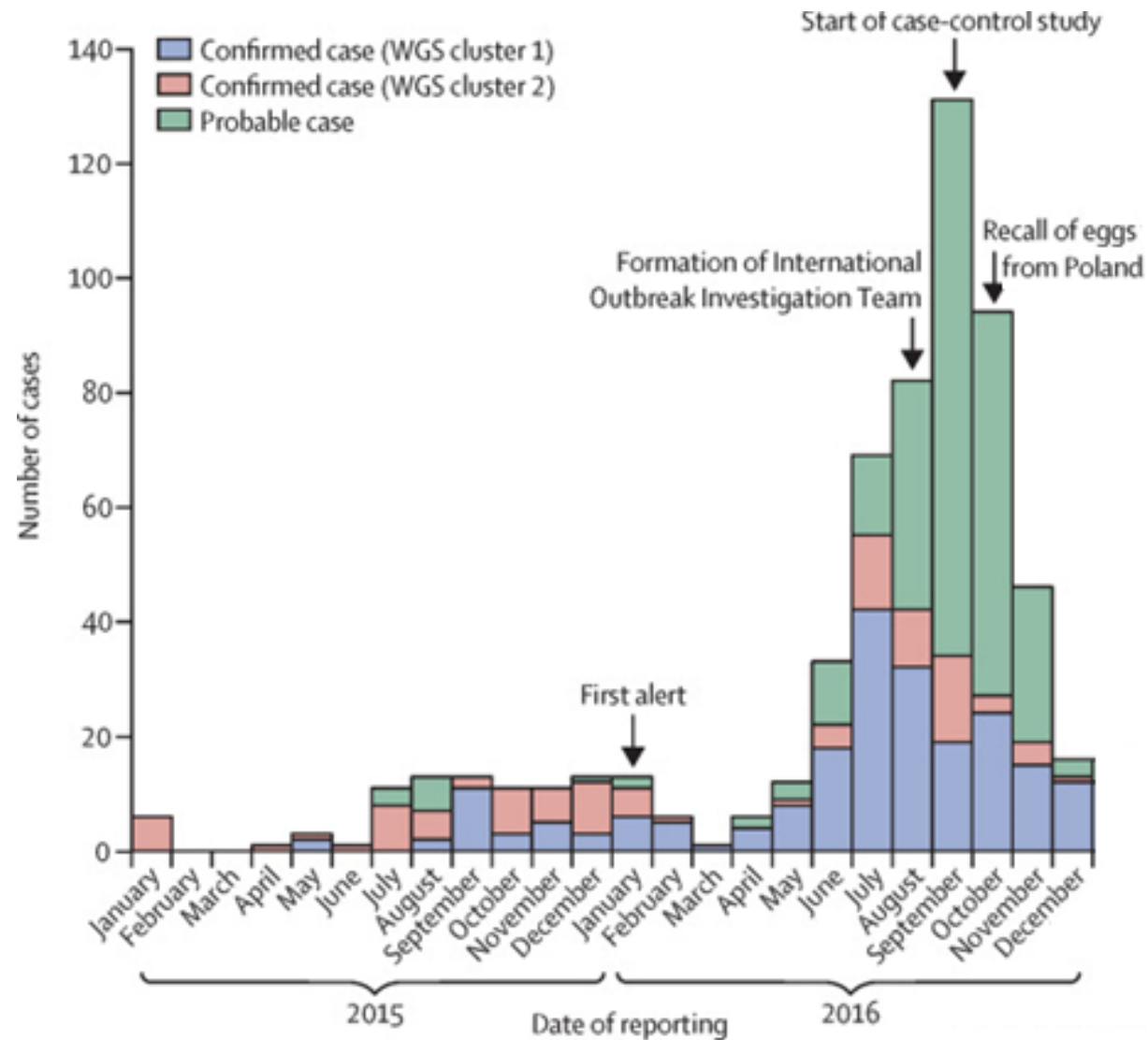
- Second urgent inquiry launched by the Netherlands in Aug 2016
- Increase of S. Enteritidis 2-9-7-3-2:
  - 55 cases since May 2016
  - Analytical study was ongoing: eggs hypothesised vehicle of infection
- International Outbreak Investigation Team established

## ***S.* Enteritidis 2-9-7/6-3-2 outbreak investigation**

- **Outbreak verification/delineation:**

- 350 isolates from 13 MS were sequenced and analysed according to the Public Health England pipeline
- Two genetically distinct clusters, about 80 SNP\*s apart:
  - Cluster \_175
  - Cluster \_360
- Clusters contained 319 isolates from 12 Member States
- International Outbreak Investigation Team decided to investigate these clusters as one epidemiological event

# Number of *S. Enteritidis* outbreak cases by month and case classification in the EU and European Economic Area, 2016



WGS cluster 1 = Cluster\_175  
WGS cluster 2 = Cluster\_360

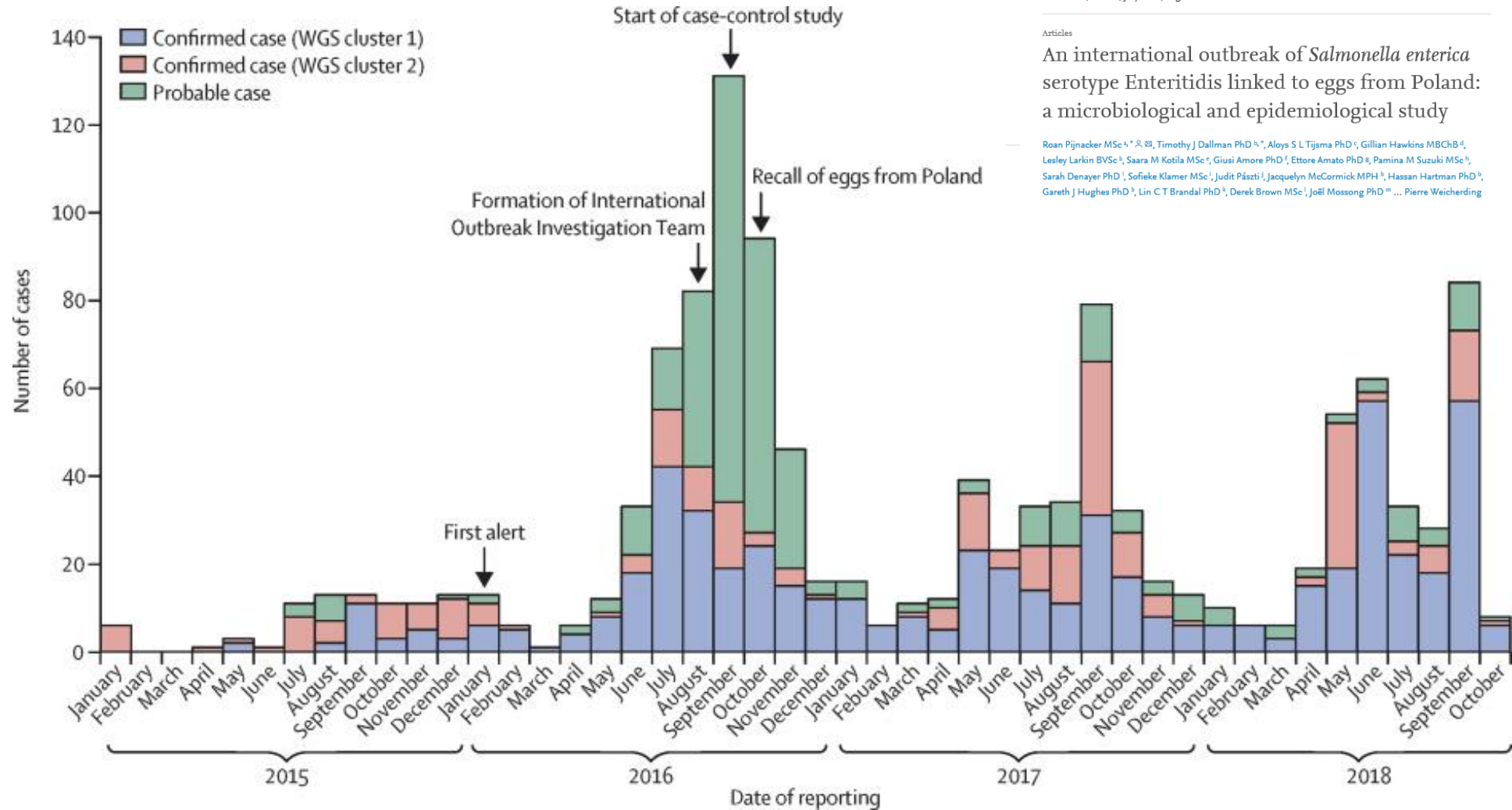
# But...



Articles

An international outbreak of *Salmonella enterica* serotype Enteritidis linked to eggs from Poland: a microbiological and epidemiological study

Roan Pijnacker MSc<sup>a,\*,†</sup>, Timothy J Dallman PhD<sup>b,†</sup>, Aloys S L Tijma PhD<sup>c</sup>, Gillian Hawkins MBChB<sup>d</sup>, Lesley Larkin BVSc<sup>e</sup>, Saara M Kotila MSc<sup>f</sup>, Giusi Amore PhD<sup>g</sup>, Ettore Amato PhD<sup>h</sup>, Pamina M Suzuki MSc<sup>h</sup>, Sarah Denayer PhD<sup>i</sup>, Sofieke Klamer MSc<sup>j</sup>, Judit Pászti<sup>k</sup>, Jacquelyn McCormick MPH<sup>h</sup>, Hassan Hartman PhD<sup>h</sup>, Gareth J Hughes PhD<sup>h</sup>, Lin C T Brandal PhD<sup>l</sup>, Derek Brown MSc<sup>j</sup>, Joël Mossong PhD<sup>m</sup> ... Pierre Weicherding



# S. Enteritidis – persisting public health risk

Date	Output*	Cumulative number of WGS confirmed** cases	Number of affected countries***
2018-11-19	<a href="#">Epi update</a>	879	14
2017-12-12	<a href="#">JROA*</a>	536	14
2017-10-12	<a href="#">Epi update</a>	483	14
2017-06-30	<a href="#">Epi update</a>	387	14
2017-03-07	<a href="#">JROA</a>	325	14
2016-10-27	<a href="#">JROA</a>	219	7
2016-09-05	<a href="#">RRA**</a>	117	4
2016-03-17	<a href="#">RRA</a>	87	4

\*JROA = Joint ECDC-EFSA Rapid Outbreak Assessment

\*\*RRA = ECDC Rapid Risk Assessment

**Epidemiological update: Multi-country outbreak of Salmonella Enteritidis infections linked to Polish eggs**

Epidemiological update  
19 Nov 2018




European Food Safety Authority

EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

**JOINT RAPID OUTBREAK ASSESSMENT**

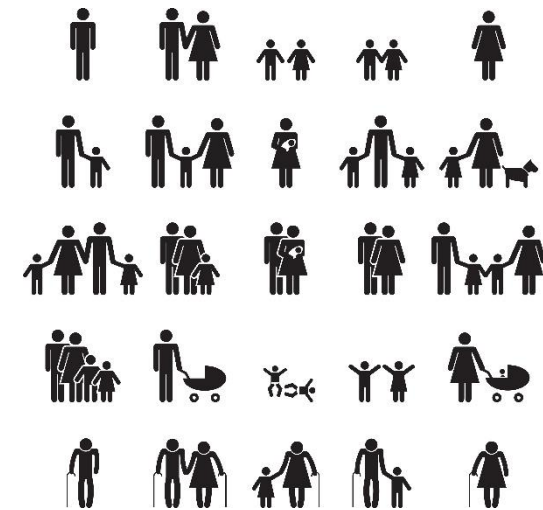
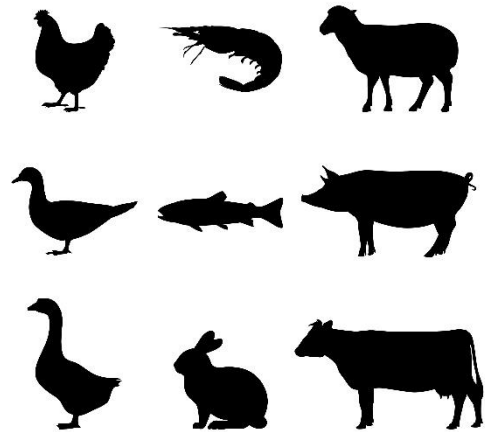
**Multi-country outbreak of *Salmonella* Enteritidis infections linked to Polish eggs**

12 December 2017

# Cross-sectoral collaboration is the key

as

## Prevention is control





# Acknowledgements

## **ECDC:**

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Erik Alm

## **EFSA:**

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Frank Boelaert

Mirko Rossi

Eleonora Sarno

Beatriz Guerra

Giusi Amore

## **EU/EEA Member States**

For reporting data and participating actively in surveillance development and response to outbreaks

# THANK YOU!

Contact us at: [fwd@ecdc.europa.eu](mailto:fwd@ecdc.europa.eu)