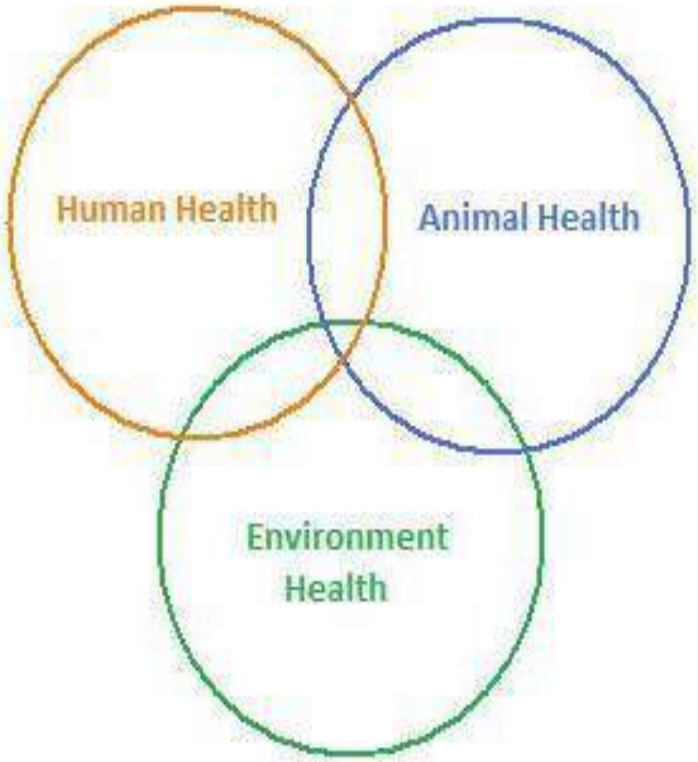
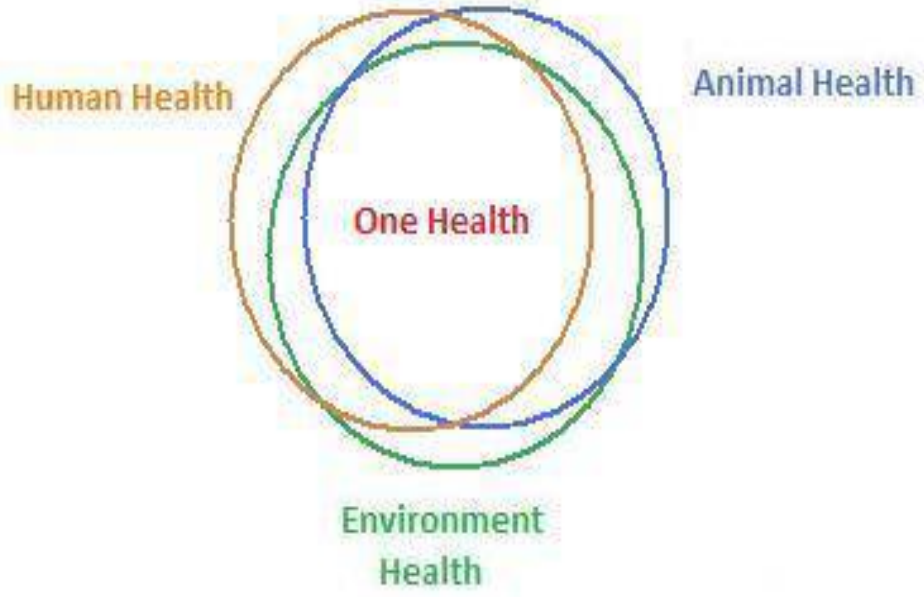
Σαλμονέλλες που απομονώνονται από άνθρωπο – ελληνικά δεδομένα

Γεωργία Μανδηλαρά
Βιολόγος,*PhD*
Επιστημονική Υπεύθυνος του Εθνικού Κέντρου Αναφοράς Σαλμονελλών, Σιγκελλών, βερο-τοξινογόνων *E.coli* & λοιπών εντεροπαθογόνων

Εθνική Σχολή Δημόσιας Υγείας
Τμήμα Μικροβιολογίας
ΚΕΔΥ-ΚΕΕΛΠΝΟ



Traditional perspective of public health



One Health approach

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→human health is only a matter of human health professionals, animal health a matter of veterinarians and environmental health a matter of environmentalists.

Urgent inquiry: Eight cases of Salmonella spp. with antigenic type 11:z41:enz15, isolated in April 2016

Epidemiological and microbiological information

UI ID: UI-358 | **Country or institution:** Greece | **Disease:** salmonellosis | **Pathogens:** Salmonella spp. | Open map

ECDC Summary

13/05/2016
Launched on 10/05/2016

Greece report nine cases of Salmonella spp. with an antigenic formula not described in the White-Kauffmann-Le Minor-scheme: 11:z41:enz15. All isolates were malonate negative / dulcitole positive, consistent with *S. enterica* subsp. *enterica*. The cases were reported between 24 March and 4 May. Six are male and three female, six children and three adults (one asymptomatic). Seven cases were from Attica, one from Korinthos and one from Kavala in Northern Greece. One case reported recent travel abroad. Cases were interviewed but no apparent epidemiological link was identified. The epidemiological investigation continues.

Austria, **Czech Republic**, **Cyprus**, **Denmark**, **Finland**, **France**, **Germany**, **Ireland**, **Italy**, **the Netherlands**, **Norway**, **Scotland**, **Sweden** and **Switzerland** have never observed any isolates with this antigenic formula.

As far as the WHO Collaborating Centre for Salmonella knows, this antigenic formulae has never been described both in the last version of Kauffmann-White-Le Minor scheme and their recent supplements/database. The Centre will receive strains from Greece to confirm this new serotype.

TESSy background data
No cases have been reported to TESSy with this antigenic formula.

Preliminary assessment
Greece reports nine cases of Salmonella spp. with an antigenic formula never earlier described. Greece is in contact with the Pasteur Institute in Paris to confirm this finding.

Epidemiological and microbiological information | Suspected sources and additional information | Authoring information

Country or institution	Modified	Number of cases	Epidemiological information	Microbiological information
Greece	13/05/2016 02:42 PM	9	Between 24 th of March and 4th of May, 9 cases (6 male and 3 female) with an unusual antigenic type were reported. All cases were of Greek nationality. Six of the cases were children and three were adults (one asymptomatic case). 7 cases were from Attica region, one from Korinthos and one from Northern Greece (Kavala). One case reported recent travel abroad. The epidemiological investigation is ongoing. Cases were interviewed and an analytical study is planned.	The antigenic type of the 9 isolates was 11:z41:enz15 (not referred to the Kauffman–White classification scheme), they were susceptible to 16 antimicrobial agents, and their PFGE profiles were indistinguishable. All isolates were malonate negative / dulcitole positive, consistent with subspecies S. enterica enterica.
Austria	11/05/2016 12:59 PM	0	We have never observed this antigenic profile in Austria.	
Cyprus	16/05/2016 11:05 AM	0	This antigenic profile has never been identified in Cyprus.	
Czech Republic	12/05/2016 11:16 AM	0	We have never observed this antigenic structure in the Czech Republic	
Denmark	11/05/2016 06:39 PM	0	We have never encountered this serotype in Denmark.	
Finland	10/05/2016 02:13 PM	0	We have not encountered this antigenic structure in Finland.	
France	13/05/2016 10:15 AM	0	As far as the WHO CC for Salmonella knows, this antigenic formulae has never been described both in the last version of Kauffmann-White-Le Minor scheme and their recent supplements/database. We are waiting for the strains in order to confirm this new serotype. May we have the species and subspecies of this Salmonella?	Address for shipment: WHO Colaborating Centre for Reference and Research on Salmonella Institut Pasteur, 28 rue du Dr Roux 75724 Paris cedex 15 France WHO CC for Salmonella (constituted by 3 international labs) maintains the serovar naming. its expertise is free.
Germany	11/05/2016 12:32 PM	0	This serovar was never detected in Germany by the NRC.	
Ireland	10/05/2016 03:56 PM	0	We have never encountered this antigenic structure in the NSSLRL in Ireland.	

Κρούσμα τροφ. νοσήματος

Στόχοι:

Δημόσια υγεία

Εθνικό Κέντρο Αναφοράς Σαλμονελλών-Σιγκελλών και VTEC (ΕΚΑΣΣ)/Λιστέριας

- **παραλαβή** στελεχών μικροβίων & επιδημιολογικών δελτίων από δημόσια και ιδιωτικά νοσηλευτικά ιδρύματα (περίπου 500 στελέχη ετησίως / > 50 εργαστήρια από όλη την Ελλάδα) → ΟΧΙ ΥΠΟΧΡΕΩΤΙΚΟ (ΔΗΛΩΣΗ ΚΕΕΛΠΝΟ → ΥΠΟΧΡΕΩΤΙΚΟ)
- **ταυτοποίηση** → βιοχημική
- **τυποποίηση** → οροτυποποίηση
  → μοριακή τυποποίηση (Pulsed Field Gel Electrophoresis)
- **έλεγχος αντοχής** σε αντιβιοτικά (www.mednet/whonet.gr)
- Διαπίστευση των μεθόδων οροτυποποίησης σαλμονελλών και ελέγχου αντοχής σε αντιβιοτικά / PFGE από τον ΕΣΥΔ (ISO/IEC 17025)
- Ανίχνευση γονιδίων τοξινών (ISO/IEC 17025) και οροτυποποίηση με PCR σε VTEC
- Ανίχνευση γονιδίων λοιμογονικότητας σε άλλου παθότυπους *E.coli*
- **τράπεζα στελεχών** από 1996 – σήμερα
- **αποστολή** αποτελεσμάτων
- **κοινοποίηση** αποτελεσμάτων σε: μικροβιολογικό εργαστ., **ΚΕΕΛΠΝΟ (Γραφείο Τροφιμογενών Νοσημάτων)** / ECDC / Υπουργείο Υγείας

Φαινοτυπικό / μοριακό αποτύπωμα, μοναδικό για κάθε καλλιέργημα

ΥΠΟΥΡΓΕΙΟ ΥΓΕΙΑΣ ΚΑΙ ΚΟΙΝΩΝΙΚΗΣ ΑΛΛΗΛΕΓΓΥΗΣ
ΕΘΝΙΚΗ ΣΧΟΛΗ ΔΗΜΟΣΙΑΣ ΥΓΕΙΑΣ
ΕΘΝΙΚΟ ΚΕΝΤΡΟ ΑΝΑΦΟΡΑΣ ΣΑΛΜΟΝΕΛΛΩΝ-ΣΙΓΚΕΛΛΩΝ

Εργαστήριο απομόνωσης	
Πηγή απομόνωσης (ανθρώπινη, άλλη)	
Ονοματεπώνυμο ασθενούς	
Νομός	
Είδος δείγματος	
Ημερομηνία λήψης δείγματος	
Ηλικία ασθενούς	
Ηλικιακή κατηγορία ασθενούς (0-11μηνών, 1-5 ετών, 6-14 ετών, 15-64 ετών, >64 ετών)	
Φύλο (άρρεν,θήλυ,άγνωστο)	
Εμπλοκή ύποπτης τροφής (αναφέρατε την ύποπτη τροφή)	
Τεκμηριωμένη τροφιμογενής αιτία (μικροβιολογική (Μ), επιδημιολογική (Ε),και τα δύο (Μ+Ε), απλή ένδειξη (Α)	
Εμπλοκή ταξιδιού (ναι,όχι άγνωστο)	
1η χώρα	
2η χώρα	
Άλλες πληροφορίες	

ΕΠΙΔΗΜΙΟΛΟΓΙΚΟ ΔΕΛΤΙΟ ΑΠΟΜΟΝΩΘΕΝΤΩΝ ΣΤΕΛΕΧΩΝ

(συμπληρώστε το όσο το δυνατό πληρέστερα)

SCIENTIFIC REPORT

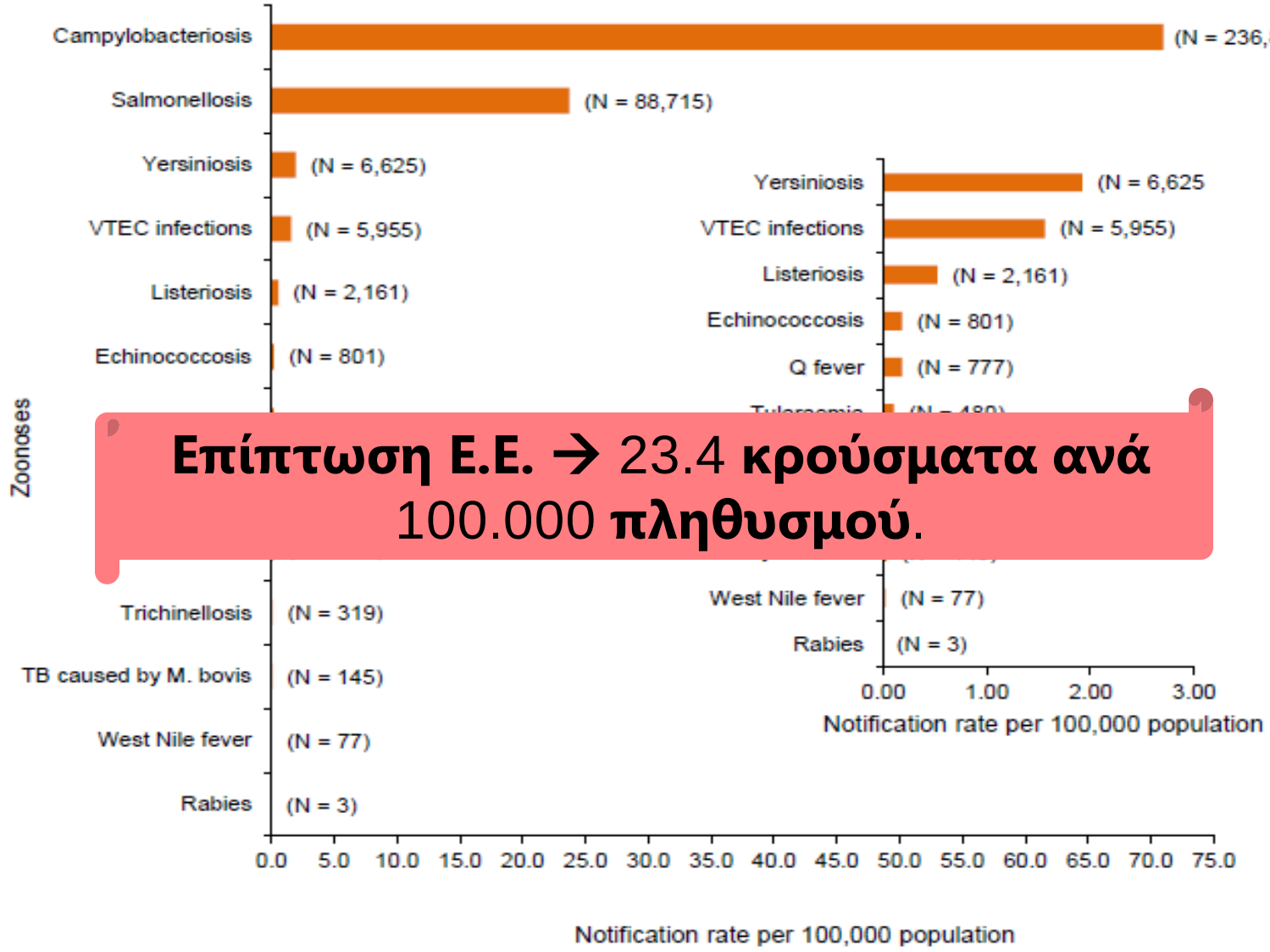
APPROVED: 2 December 2015 PUBLISHED: 17 December 2015 AMENDED: 4 February 2016

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



Επίπτωση Ε.Ε. → 23.4 **κρούσματα ανά** 100.000 **πληθυσμού**.

Total number of confirmed cases is indicated in parenthesis at the end each bar. Exception is made for West Nile fever where total number of cases was used.

Figure 1: Reported numbers and notification rates of confirmed human zoonoses cases in the EU, 2014

Table 1: Reported hospitalisation and case-fatality rates due to zoonoses in confirmed human cases in the EU, 2014

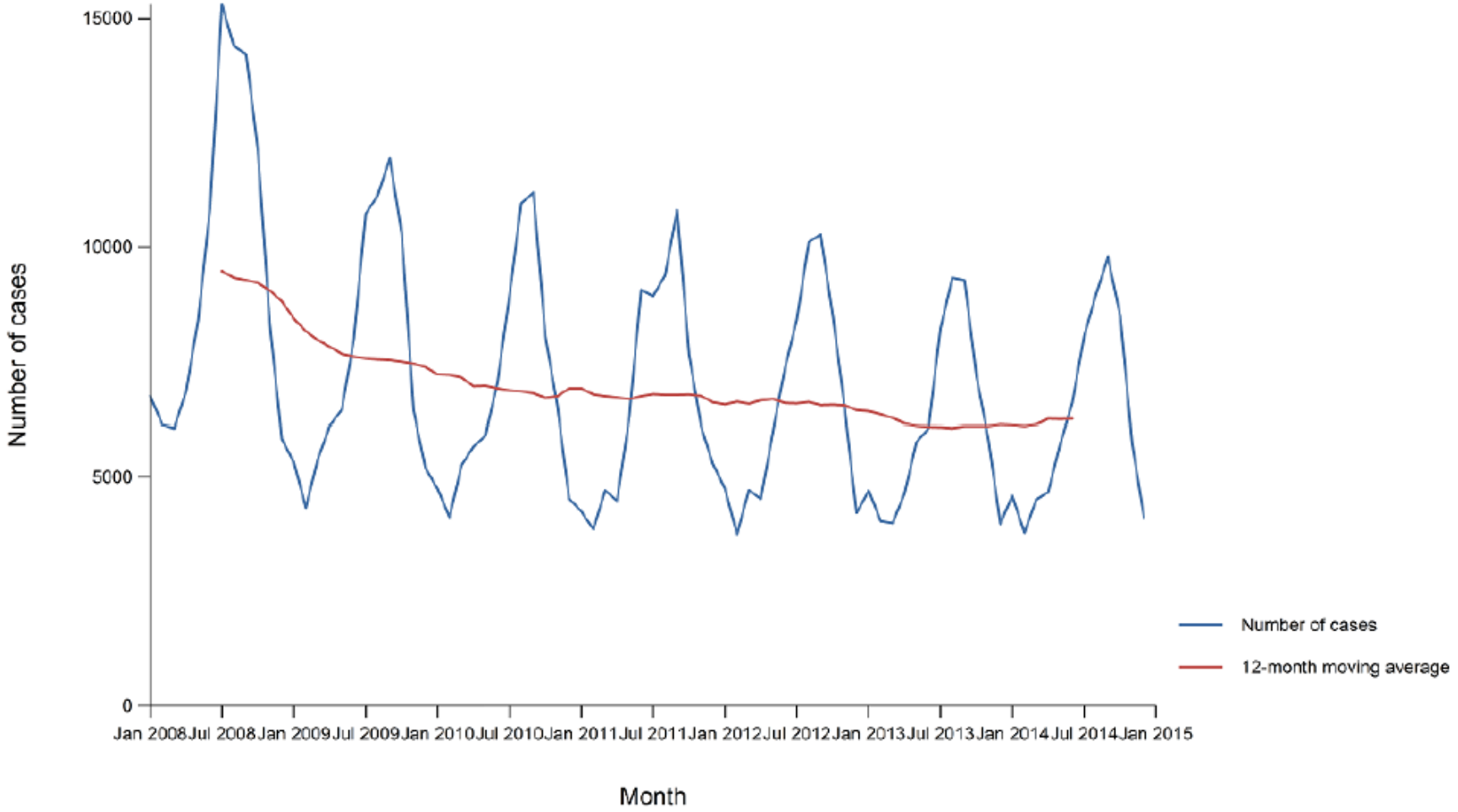
Disease	Number of confirmed[(a)] human cases	Hospitalisation				Deaths			
		Status available (%)	Number of reporting MS[(b)]	Reported hospitalised cases	Proportion hospitalised (%)	Outcome available (%)	Number of reporting MS[(b)]	Reported deaths	Case-fatality (%)
Campylobacteriosis	236,851	25.4	16	18,303	30.4	73.6	15	25	0.01
Salmonellosis	88,715	32.2	14	9,830	34.4	49.6	15	65	0.15
Yersiniosis	6,625	15.2	12	442	44.0	58.3	14	5	0.13
VTEC infections	5,955	39.9	15	930	39.2	58.6	18	7	0.20
Listeriosis	2,161	38.0	16	812	98.9	64.8	20	210	15.0

-**15.3% αύξηση** δηλούμενης επίπτωσης σε σχέση με 2013 (20,3/100.000 πληθυσμού)

- στατιστικά σημαντική τάση **μείωσης** σαλμονελλώσεων στην 7-ετία 2008-2014

Table 2: Reported human cases of salmonellosis and notification rates per 100,000 population in the EU/EEA, by country and year, 2010–2014

Country	2014					2013		2012		2011		2010	
	National coverage[a]	Data format[a]	Total cases	Confirmed cases & rates		Confirmed cases &rates		Confirmed cases & rates		Confirmed cases & rates		Confirmed cases & rates	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	1,659	1,654	19.4	1,404	16.6	1,773	21.1	1,432	17.0	2,179	26.0
Belgium[b]	N	C	2,698	2,698	–	2,528	–	3,101	–	3,177	–	3,169	–
Bulgaria	Y	A	730	730	10.1	766	10.5	839	11.5	924	12.5	1,154	15.5
Croatia	Y	A	1,494	1,494	35.2	–	–	–	–	–	–	–	–
Cyprus	Y	C	88	88	10.3	79	9.1	90	10.4	110	13.1	136	16.6
Czech Republic	Y	C	13,478	13,255	126.1	9,790	93.1	10,056	95.7	8,499	81.0	8,209	78.5
Denmark	Y	C	1,124	1,124	20.0	1,137	20.3	1,207	21.6	1,170	21.0	1,608	29.1
Estonia	Y	C	93	92	7.0	183	13.9	249	18.8	375	28.2	381	28.6
Finland	Y	C	1,622	1,622	29.8	1,986	36.6	2,199	40.7	2,098	39.0	2,421	45.2
France[c]	Y	C	8,860	8,860	28.0	8,927	28.4	8,705	27.8	8,685	27.8	7,184	23.1
Germany	Y	C	16,222	16,000	19.8	18,696	22.8	20,493	25.1	23,982	29.4	24,833	30.4
Greece	Y	C	349	349	3.2	414	3.7	404	3.6	471	4.2	297	2.7
Hungary	Y	C	5,523	5,249	53.1	4,953	50.2	5,462	55.2	6,169	62.8	5,953	60.4
Ireland	Y	C	259	259	5.6	326	7.1	309	6.7	311	6.8	349	7.7
Italy[d]	–	–	1,168	1168	–	4,660	7.8	4,829	8.1	4,467	7.5	5,319	9.0
Latvia	Y	C	282	278	13.9	385	19.0	547	26.8	995	48.0	877	41.4
Lithuania	Y	C	1,145	1,145	38.9	1,199	40.4	1,762	58.7	2,294	75.2	1,962	62.4
Luxembourg	Y	C	110	110	20.0	120	22.3	136	25.9	125	24.4	211	42.0
Malta	Y	C	132	132	31.0	84	19.9	88	21.1	129	31.1	160	38.6
Netherlands[e]	N	C	969	969	9.0	979	9.1	2,198	20.5	1,284	12.0	1,447	13.6
Poland	Y	A	8,392	8,038	21.1	7,308	19.0	7,952	20.6	8,400	21.8	9,257	24.3
Portugal	Y	C	267	261	2.5	167	1.6	185	1.8	174	1.7	205	2.0
Romania	Y	C	1,644	1,512	7.6	1,302	6.5	698	3.5	989	5.0	1,285	6.4
Slovakia	Y	C	4,380	4,078	75.3	3,807	70.3	4,627	85.6	3,897	72.3	4,942	91.7
Slovenia	Y	C	597	597	29.0	316	15.4	392	19.1	400	19.5	363	17.7
Spain[f]	N	C	6,643	6643	47.6	4,537	32.4	4,224	36.1	3,786	32.5	4,420	38.0
Sweden	Y	C	2,211	2,211	22.9	2,842	29.7	2,922	30.8	2,887	30.7	3,612	38.7
United Kingdom	Y	C	8,099	8,099	12.6	8,465	13.2	8,812	13.9	9,455	15.1	9,670	15.6
EU Total	–	–	90,238	88,715	23.4	87,360	20.3	94,259	22.0	96,685	20.9	101,603	22.1
Iceland	Y	C	40	40	12.3	48	15.2	38	11.9	45	14.1	34	10.7
Norway	Y	C	1,120	1,118	21.9	1,361	26.9	1,371	27.5	1,290	26.2	1,370	28.2
Switzerland[g]	Y	C	1,238	1,238	15.2	1,271	15.8	1,242	15.6	1,301	16.5	1,177	15.1

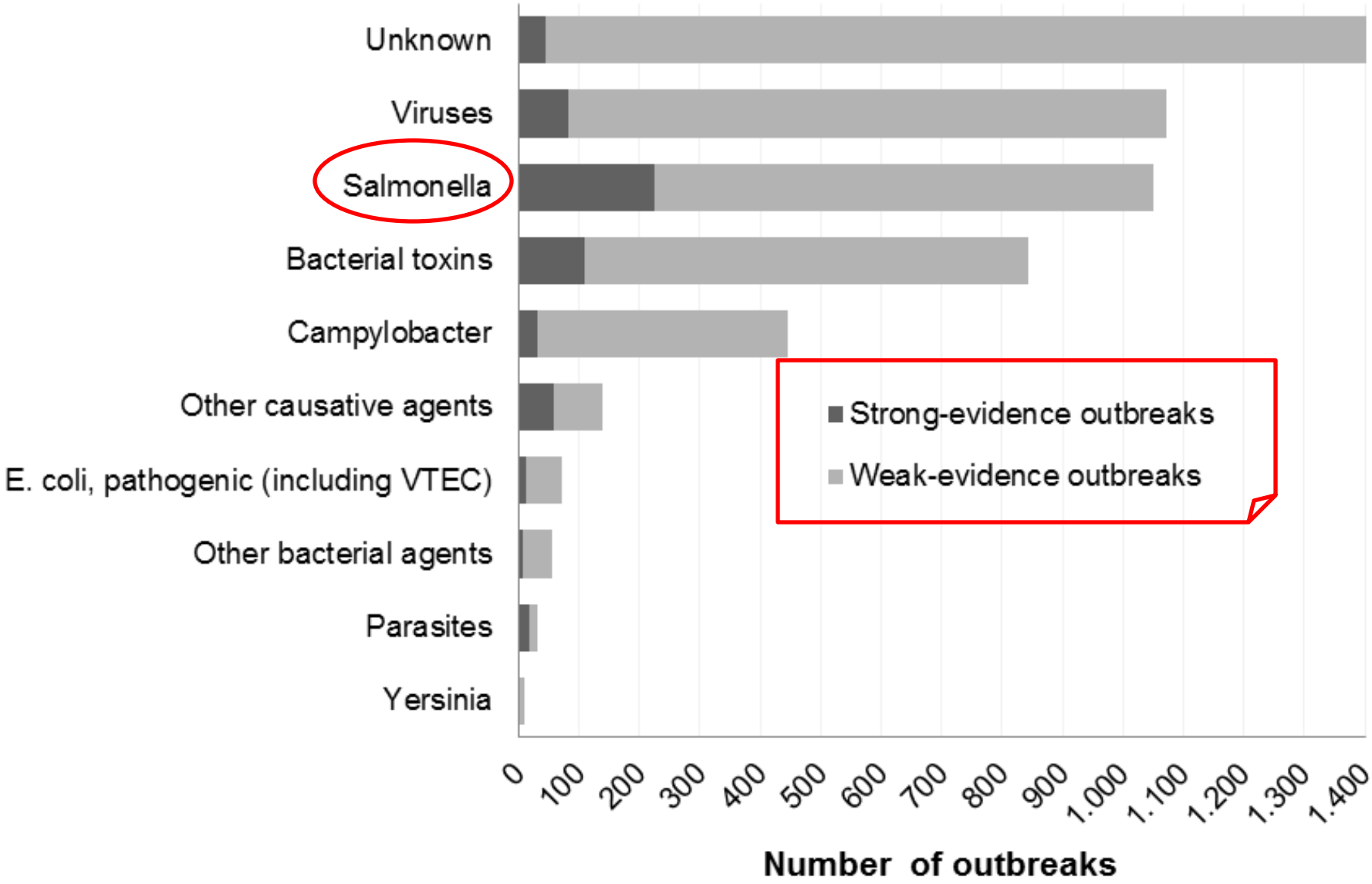


Source: Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. Austria, Bulgaria, Croatia, Italy, Latvia, Poland and Romania did not report data to the level of detail required for the analysis.

Figure 3: Trend in reported confirmed human cases of non-typhoidal salmonellosis in the EU/EEA, by month of reporting, 2008–2014

Table 3: Distribution of reported confirmed cases of human salmonellosis in the EU/EEA, 2012–2014, by the 20 most frequent serovars in 2014

Serovar	2014			2013			2012		
	Cases	MS	%	Cases	MS	%	Cases	MS	%
Enteritidis	32,878	27	44.4	29,090	27	39.5	32,917	27	41.0
Typhimurium	12,867	27	17.4	14,852	27	20.2	17,975	27	22.4
Monophasic Typhimurium 1,4,[5],12:i:-	5,770	13	7.8	6,313	14	8.6	5,836	12	7.3
Infantis	1,841	26	2.5	2,226	25	3.0	1,929	26	2.4
Stanley	757	23	1.0	714	21	1.0	969	20	1.2
Derby	753	23	1.0	813	21	1.1	730	21	0.9
Newport	752	20	1.0	818	21	1.1	754	21	0.9
Kentucky	605	21	0.8	651	23	0.9	626	23	0.8
Virchow	509	22	0.7	571	22	0.8	532	20	0.7
Bovismorbificans	441	22	0.6	412	20	0.6	410	20	0.5
Java	388	15	0.5	581	24	0.8	445	18	0.6
Agona	378	23	0.5	401	18	0.5	452	18	0.6
Saintpaul	374	19	0.5	448	17	0.6	354	18	0.4
Muenchen	368	17	0.5	434	14	0.6	242	20	0.3
Napoli	333	14	0.4	290	17	0.4	365	16	0.5
Brandenburg	294	20	0.4	111	13	0.2	302	17	0.4
Chester	294	18	0.4	267	19	0.4	106	13	0.1
Hadar	286	16	0.4	238	10	0.3	300	20	0.4
Braenderup	276	17	0.4	245	19	0.3	454	17	0.6
Oranienburg	261	17	0.4	274	15	0.4	311	16	0.4
Other	13,599	–	18.4	13,883	-	18.9	14,286	–	17.8
Total	74,024	27	100.0	73,632	27	100.0	80,295	27	100.0



Τροφιμογενείς επιδημίες ανά αιτιολογικό παράγοντα, ΕΕ, 2014

Outbreaks…

Table 27: Number of outbreaks and human cases per causative agents in food-borne outbreaks in the EU (including water-borne outbreaks), 2014

Country	Strong-evidence outbreaks					Weak-evidence outbreaks					Total outbreaks	Reporting rate per 100,000
	Number	%	Cases	Hospitalised	Deaths	Number	%	Cases	Hospitalised	Deaths		
Viruses	84	14.19	3,654	112	0	988	21.2	8,086	2,374	2	1,072	20.41
Salmonella	226	38.18	3,677	890	11	823	17.66	5,617	1,059	3	1,049	19.98
Bacterial toxins	109	18.41	3,026	187	3	734	15.75	6,342	405	2	843	16.05
Campylobacter	31	5.24	525	40	0	415	8.91	1,383	149	0	446	8.49
Other causative agents	58	9.8	238	38	1	82	1.76	322	33	1	140	2.67
Other bacterial agents	8	1.35	101	12	0	47	1.01	398	69	1	55	1.05
E. coli, pathogenic – verotoxigenic *E. coli* (VTEC)	7	1.18	138	8	0	34	0.73	147	28	0	41	0.78
Parasites	17	2.87	287	82	0	16	0.34	62	4	0	33	0.63
E. coli, pathogenic (excluding VTEC)	7	1.18	448	90	0	23	0.49	288	15	0	30	0.57
Yersinia	1	0.17	55	4	0	10	0.21	153	5	0	11	0.21
Unknown	44	7.43	621	13	0	1,487	31.91	10,097	821	3	1,531	29.15
Total	592	100	12,770	1,476	15	4,659	100	32,895	4,962	12	5,251	100

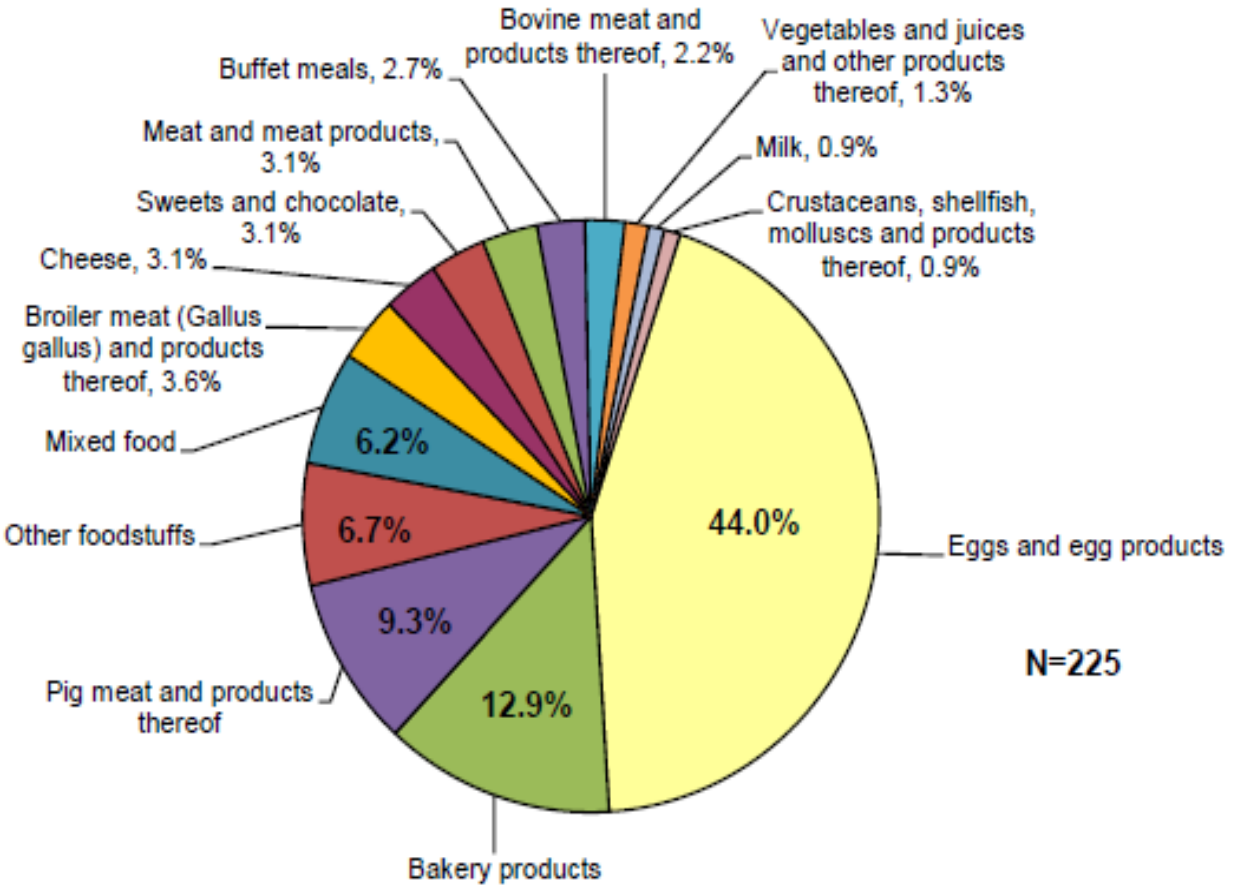


Figure 61: Distribution of food vehicles in strong-evidence outbreaks caused by *Salmonella* in the EU, 2014

Figure 58: Distribution of strong-evidence outbreaks by food vehicle in the EU, 2014

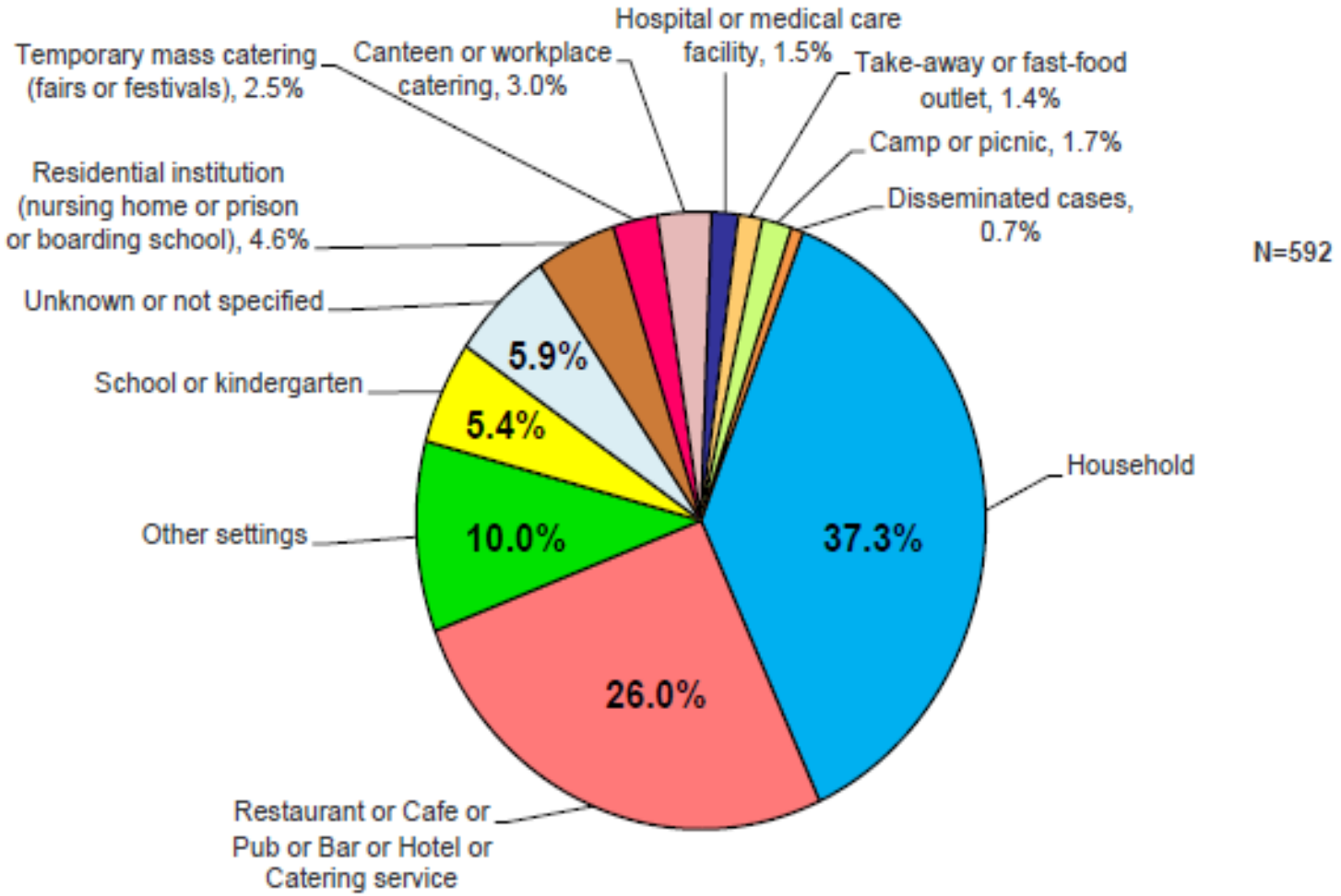
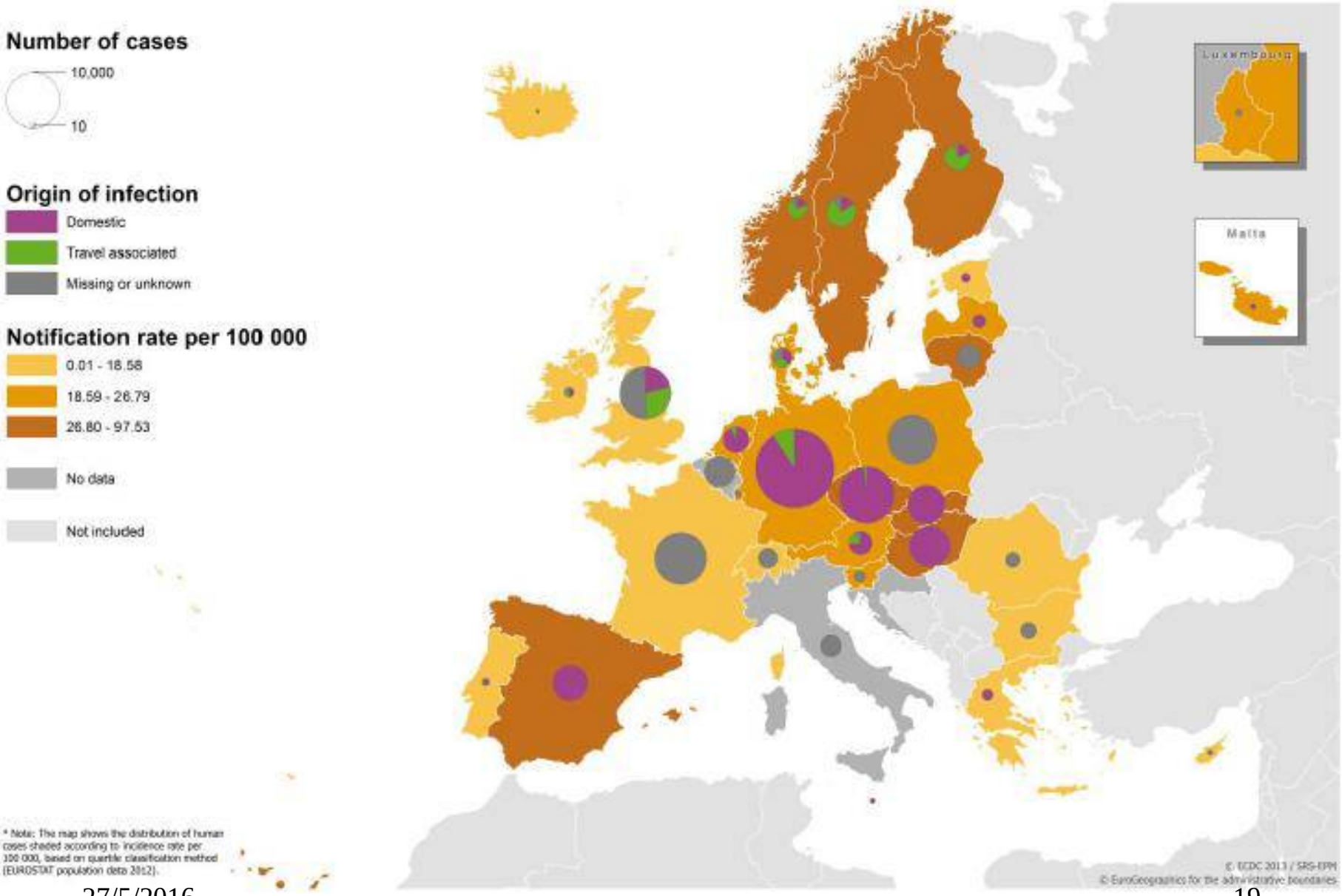


Figure 59: Distribution of strong-evidence outbreaks by settings in the EU, 2014

Figure SA1. Notification rates and origin of infection in human salmonellosis in the EU/EFTA, 2012



Note: The map shows the distribution of human cases shaded according to incidence rate per 100,000 based on quartile classification method (EUROSTAT population data 2012).

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

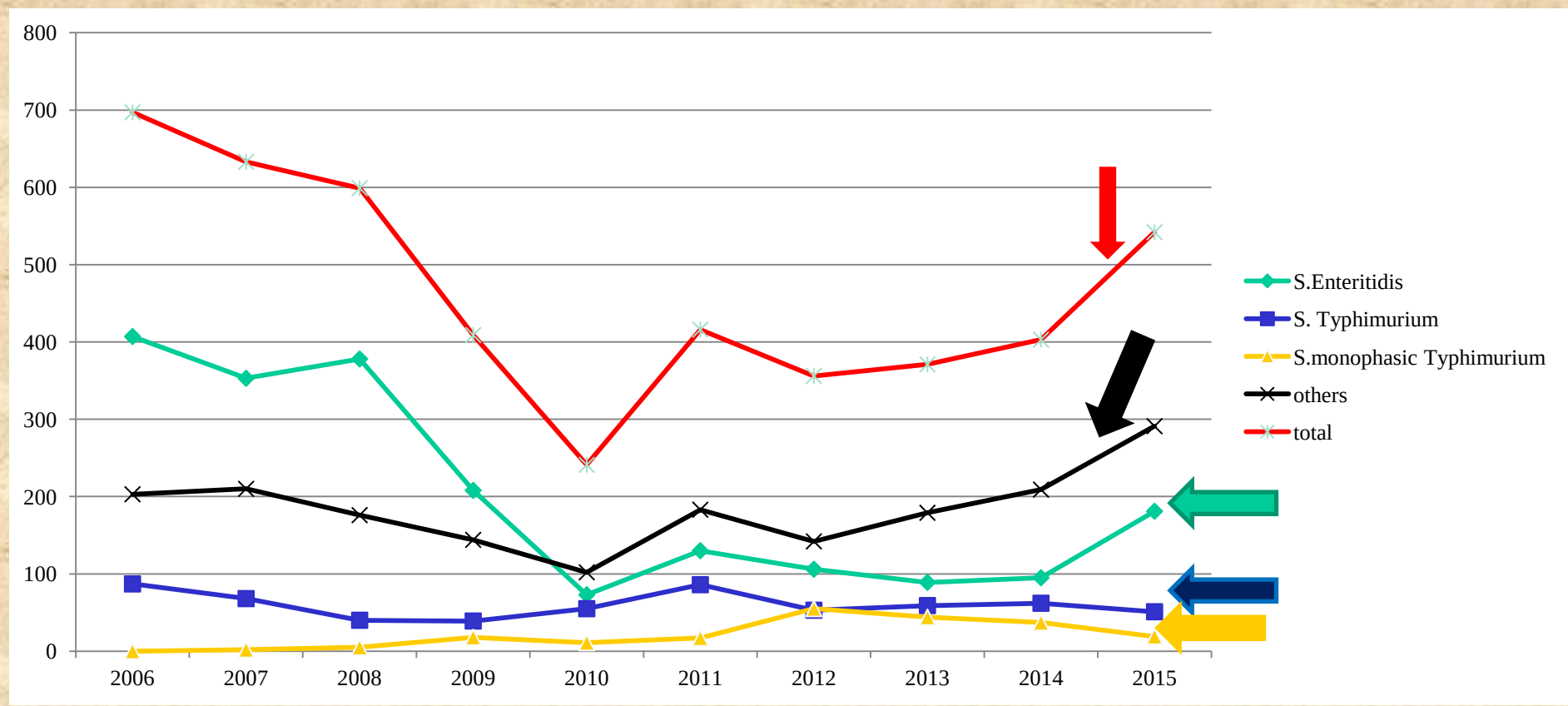
European Food Safety Authority
European Centre for Disease Prevention and Control

Table 8: Antimicrobial resistance in *Salmonella* spp. (all non-typhoidal serovars) from humans per country in 2014

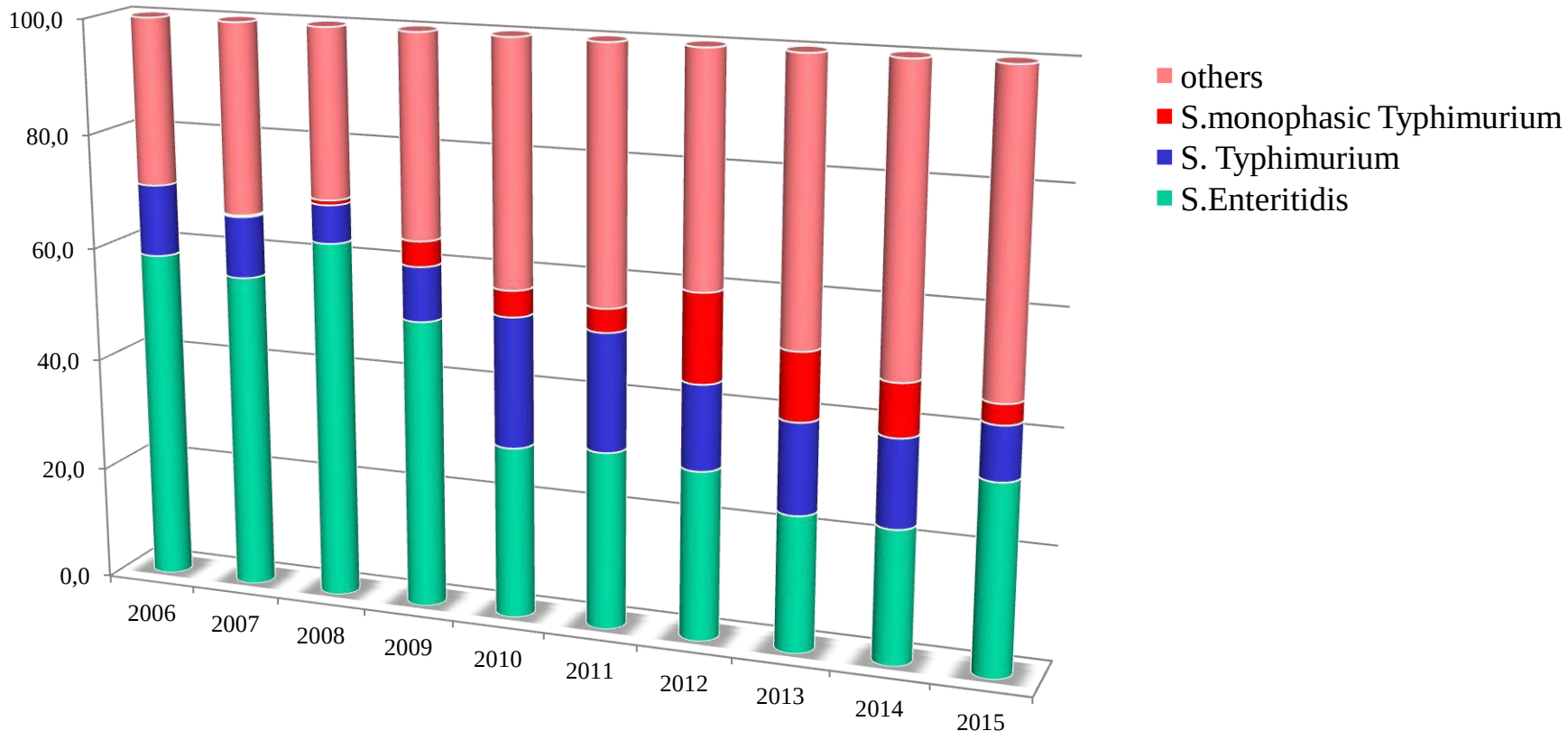
Country	Ampicillin		Azithromycin		Cefotaxime		Ceftazidime		Chloramphenicol		Ciprofloxacin[(b)]		Colistin	
	N	% Res	N	% Res	N	% Res	N	% Res	N	% Res	N	% Res	N	% Res
Austria[(a)]	1,670	14.6	–	–	1,670	1.0	1,670	1.0	1,670	2.9	1,576	19.0	–	–
Belgium	871	39.8	–	–	871	1.1	–	–	871	7.5	871	2.6	–	–
Denmark[(a)]	407	39.8	407	1.7	407	1.0	407	0.5	407	3.9	407	5.7	407	5.9[(c)]
Estonia[(a)]	21	38.1	–	–	21	0	21	0	21	9.5	21	14.3	–	–
Finland[(a)]	308	20.8	–	–	308	2.3	–	–	308	5.5	308	1.9	–	–
France	1,255	29.1	–	–	-	-	581	2.6	1254	9.3	1,255	12.7	–	–
Greece[(a)]	9	NA	–	–	9	NA	9	NA	9	NA	9	NA	–	–
Hungary	1,024	25.2	–	–	1,024	0.5	–	–	1,024	5.9	295	0.3	–	–
Ireland[(a)]	167	36.5	171	1.2	171	4.1	171	2.9	169	13.6	171	14.0	–	–
Italy[(a)]	111	30.6	–	–	111	10.8	111	10.8	111	8.1	111	4.5	–	–
Latvia	26	23.1	–	–	–	–	–	–	–	–	25	8.0	–	–
Lithuania	1,122	26.6	–	–	992	0.3	592	0.2	591	2.2	892	13.5	–	–
Luxembourg[(a)]	72	16.7	–	–	110	0.9	110	1.8	110	4.5	110	7.3	–	–
Malta	132	53.0	–	–	–	–	–	–	–	–	132	50.0	–	–
Netherlands[(a)]	721	32.2	721	0.6	721	0.8	721	0.3	721	4.7	721	9.2	721	21.5
Portugal[(a)]	140	55.0	–	–	140	0.7	-	-	140	12.1	140	0	–	–
Romania[(a)]	216	21.3	–	–	216	0	216	0	216	8.3	216	9.7	–	–
Slovakia	672	12.1	–	–	324	1.5	13	NA	13	30.8	427	1.2	–	–
Slovenia	591	11.8	–	–	591	0.2	580	0.7	591	3.0	589	8.8	–	–
Spain	1,715	46.2	–	–	1,714	1.3	-	-	1,714	7.8	1,714	1.2	–	–
United Kingdom	513	18.1	–	–	500	1.0	1	NA	517	4.6	540	5.0	–	–
Total (MS 21)	**11,763**	**28.2**	**1,299**	**1.0**	**9,900**	**1.1**	**5,203**	**1.2**	**10,457**	**6.0**	**10,530**	**8.8**	**1,128**	**15.9**
Norway[(a)]	342	28.4	–	–	342	0.9	342	0.3	141	10.6	342	3.2	–	–

Country	Gentamicin		Nalidixic acid		Sulfamethoxazole[d]		Tetracycline		Tigecycline		Trimethoprim		Co-trimoxazole	
	N	% Res	N	% Res	N	% Res	N	% Res	N	% Res	N	% Res	N	% Re
Austria[a]	1,670	1.8	1,670	19.0	1,670	16.4	1,670	17.3	1670	1.2	1,670	3.5	–	
Belgium	871	2.5	869	15.0	–	–	871	33.2	–	–	–	–	857	18
Denmark[a]	407	1.7	407	5.2	407	41.0	407	43.0	407	3.4	407	5.4	–	
Estonia[a]	21	9.5	21	14.3	21	38.1	21	19.0	–	–	21	9.5	–	
Finland[a]	308	2.9	308	10.7	308	23.7	308	19.5	–	–	308	3.6	–	
France	1,255	8.8	1,256	30.0	1,255	38.5	1,256	40.0	–	–	1,254	14.4	532	17
Greece[a]	–	–	9	NA	–	–	9	NA	–	–	–	–	–	
Hungary	1,024	0.4	295	37.3	–	–	1,024	34.4	–	–	1,024	3.4	1,012	3
Ireland[a]	171	5.3	170	10.6	171	39.8	168	32.7	171	2.3	169	12.4	–	
Italy[a]	111	4.5	111	27.9	111	45.0	111	36.9	-	-	111	18.0	111	18
Latvia	–	–	–	–	–	–	–	–	–	–	–	–	25	8
Lithuania	506	1.4	456	20.0	–	–	483	16.4	–	–	485	3.7	1058	4
Luxembourg[a]	110	1.8	–	–	110	37.3	110	37.3	–	–	110	4.5	110	4
Malta	–	–	–	–	–	–	–	–	–	–	–	–	132	80
Netherlands[a]	721	1.5	721	7.4	721	34.1	721	33.8	721	3.1	721	9.4	–	
Portugal[a]	140	2.9	140	10.0	–	–	139	54.0	–	–	–	–	139	5
Romania[a]	216	0.9	216	20.4	216	34.7	216	13.4	–	–	216	30.6	216	18
Slovakia	–	–	1	NA	1	NA	448	12.3	–	–	–	–	302	3
Slovenia	591	0.5	–	–	585	25.8	591	10.7	–	–	591	1.0	591	0
Spain	1,709	2.3	1,715	26.8	–	–	1,715	46.9	–	–	–	–	1,713	5
United Kingdom	521	2.9	517	16.6	510	21.0	499	21.0	–	–	536	7.8	37	10
Total (MS 21)	**10,352**	**2.7**	**8,882**	**20.1**	**6,086**	**28.6**	**10,767**	**30.3**	**2,969**	**2.0**	**7,623**	**7.3**	**6,835**	**9**
Norway[b]	342	3.8	141	12.8	–	–	141	53.9	–	–	–	–	342	3

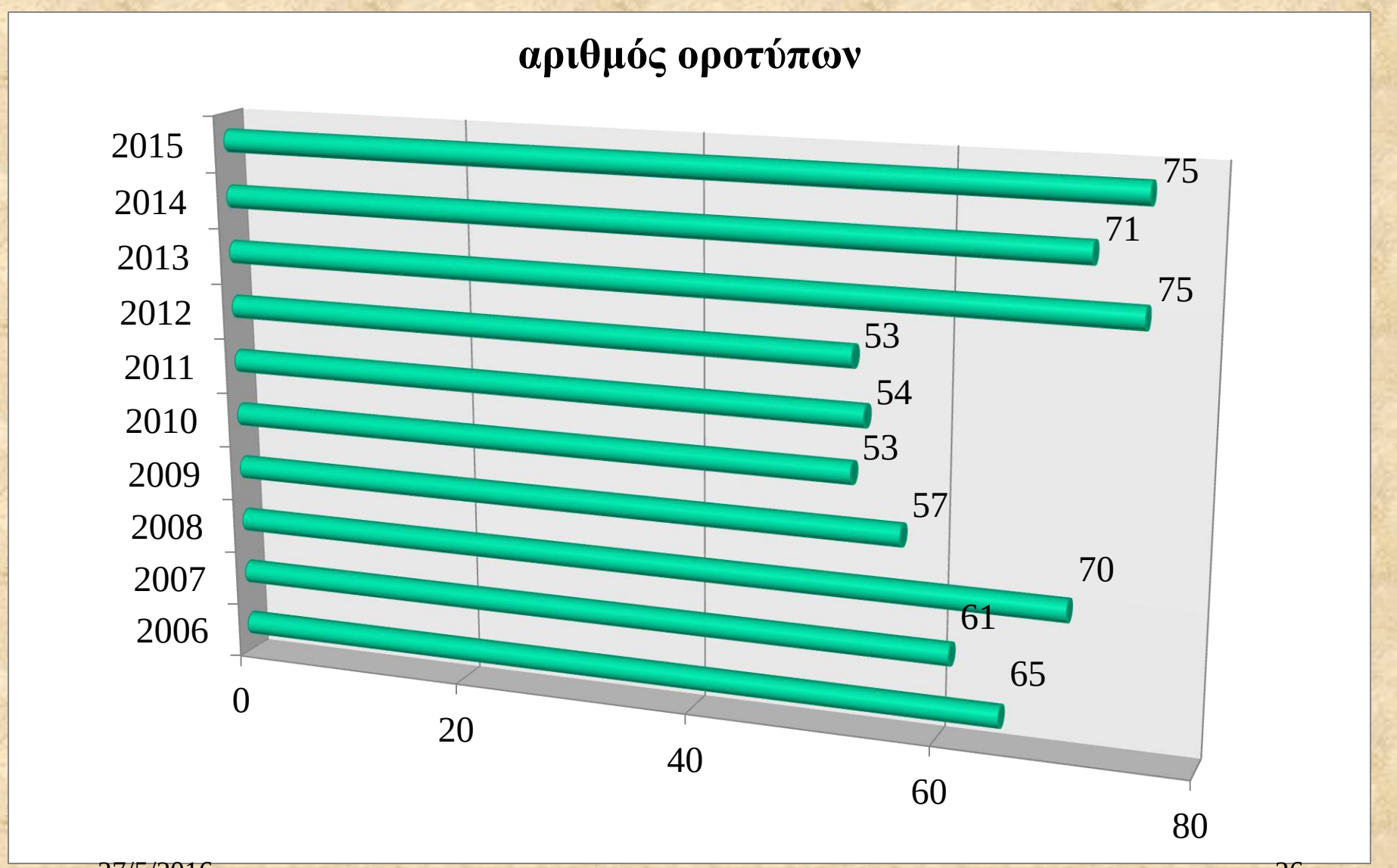
Salmonella spp., Ελλάδα – ΕΚΑΣΣ 2006-2015



Salmonella spp., Ελλάδα-ΕΚΑΣΣ 2006-2015 (%)

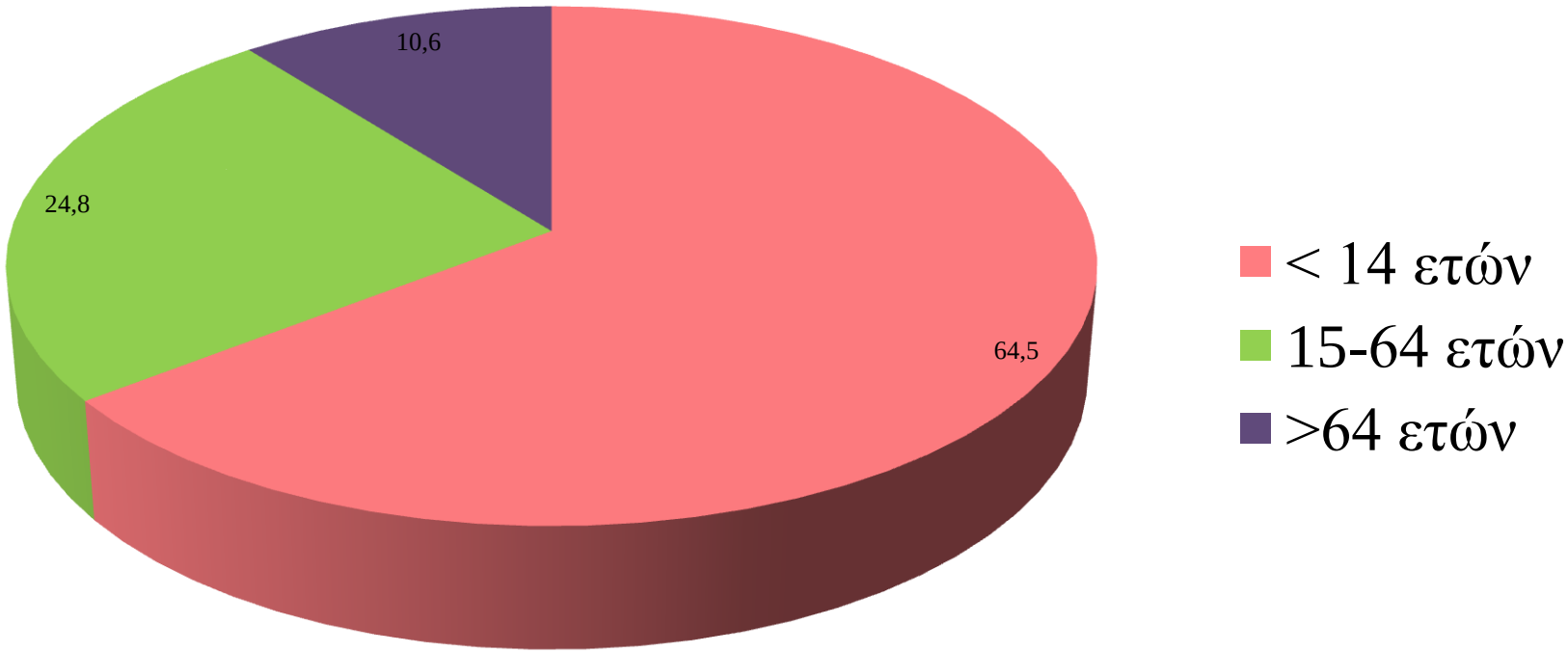



100,0
80,0
60,0
40,0
20,0
0,0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
29,1
33,2
29,4
35,2
42,3
44,0
39,9
48,2
51,9
53,7
0,0
0,3
0,8
4,4
4,6
4,1
15,4
11,9
9,2
3,5
12,5
10,7
6,7
9,5
22,8
20,7
14,9
15,9
15,4
9,4
58,4
55,8
63,1
50,9
30,3
31,3
29,8
24,0
23,6
33,4
others
S.monophasic Typhimurium
S. Typhimurium
S.Enteritidis

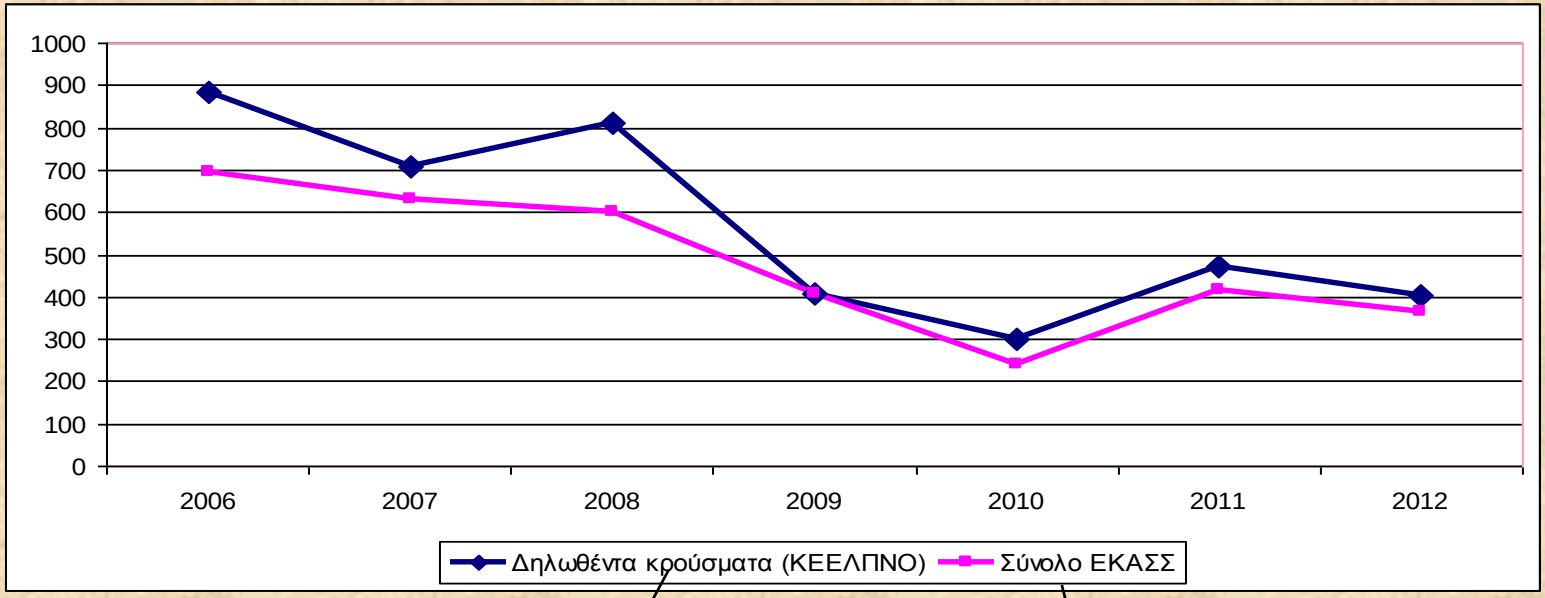

αριθμός οροτύπων
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006
75
71
75
53
54
53
57
70
61
65
0
20
40
60
80

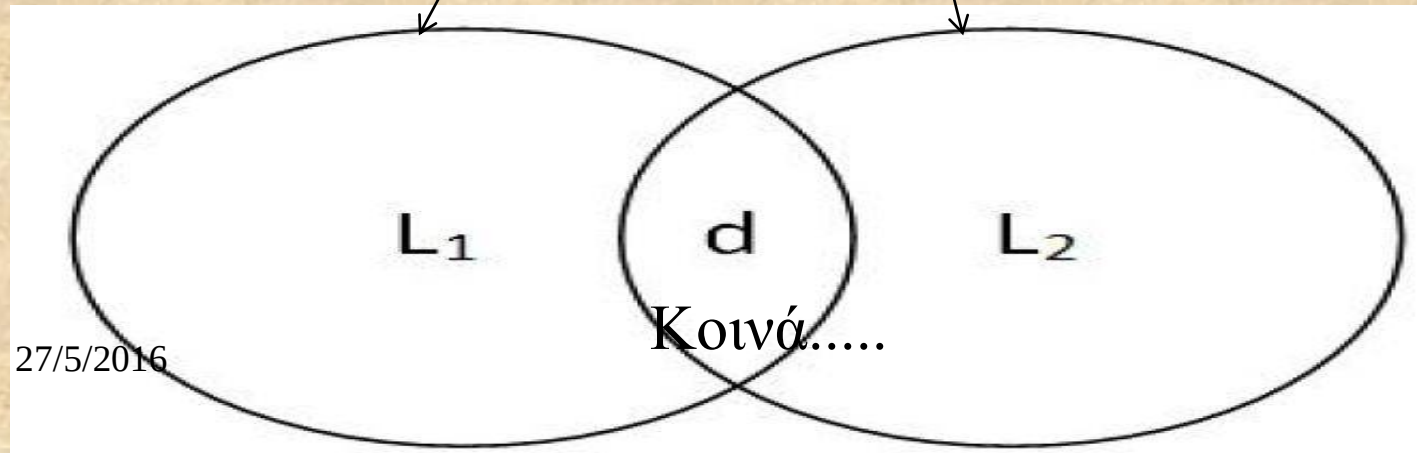
Εποχιακή διακύμανση S. Enteritidis (% **του συνόλου) ΕΚΑΣΣ,** 2014-2015

Ηλικιακή κατανομή



Αριθμός δηλωθέντων κρουσμάτων μη τυφο-παρατυφικής σαλμονέλλωσης,ΚΕΕΛΠΝΟ (ΣΥΔΝ) Ελλάδα, 2004-2012 και αριθμός καλλιεργημάτων που εστάλησαν στο ΕΚΑΣΣ.





Κοινά.....

Τμήμα Επιδημιολογικής Επιτήρησης και Παρέμβασης

ΕΠΙΔΗΜΙΟΛΟΓΙΚΑ ΔΕΔΟΜΕΝΑ ΓΙΑ ΤΗ ΣΑΛΜΟΝΕΛΛΩΣΗ (ΜΗ ΤΥΦΟ-ΠΑΡΑΤΥΦΙΚΗ)
ΣΤΗΝ ΕΛΛΑΔΑ 2004-2013
(ΣΥΣΤΗΜΑ ΥΠΟΧΡΕΩΤΙΚΗΣ ΔΗΛΩΣΗΣ ΝΟΣΗΜΑΤΩΝ)

http://www.keelpno.gr/

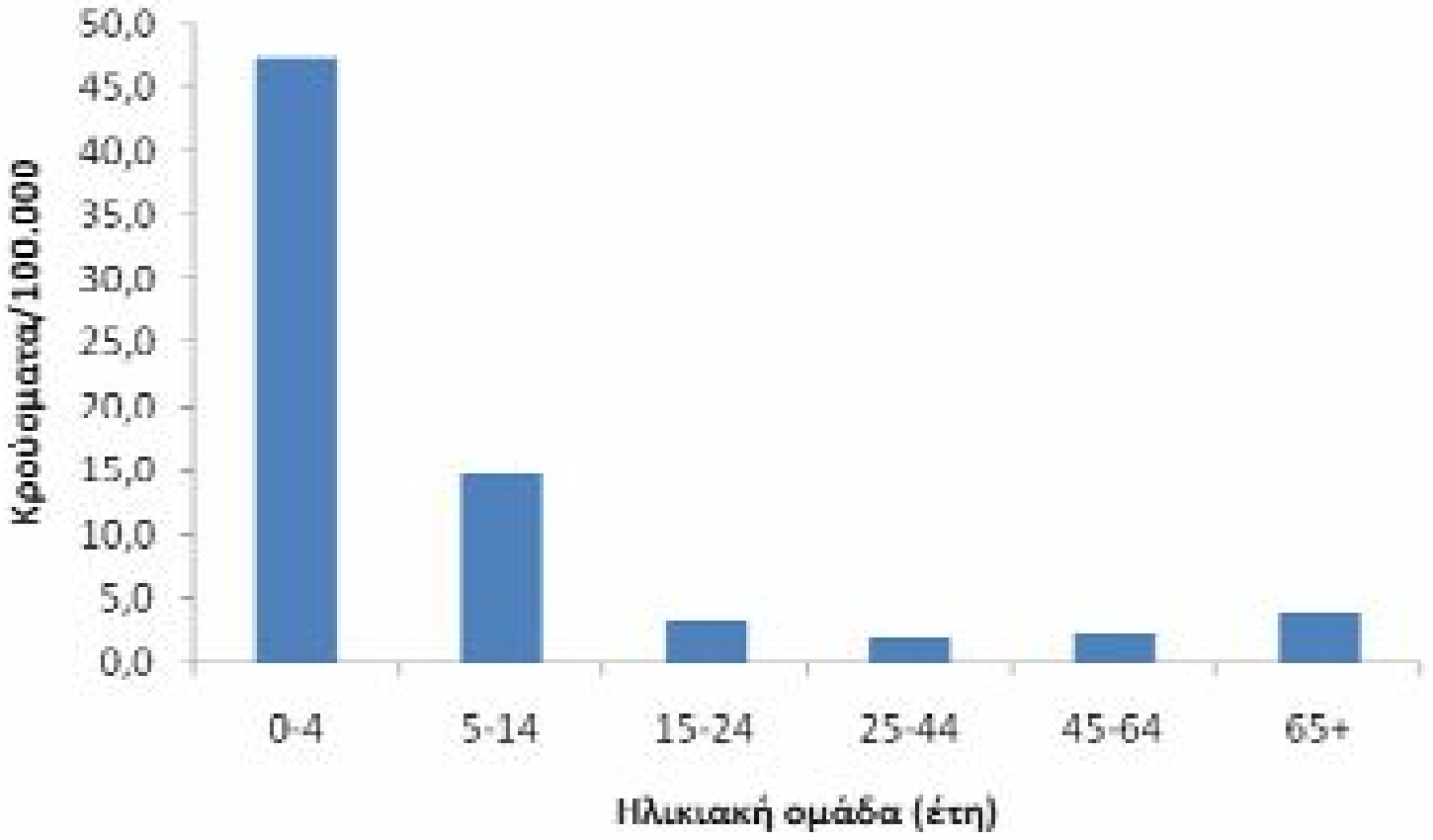
Πίνακας 1. Αριθμός δηλωθέντων κρουσμάτων μη τυφο-παρατυφικής σαλμονέλλωσης, Σύστημα Υποχρεωτικής Δήλωσης Νοσημάτων, Ελλάδα, 2004-2013.

Έτος	Αριθμός κρουσμάτων
2004	1327
2005	1062
2006	886
2007	709
2008	810
2009	406
2010*	299
2011	471
2012	405
2013	417

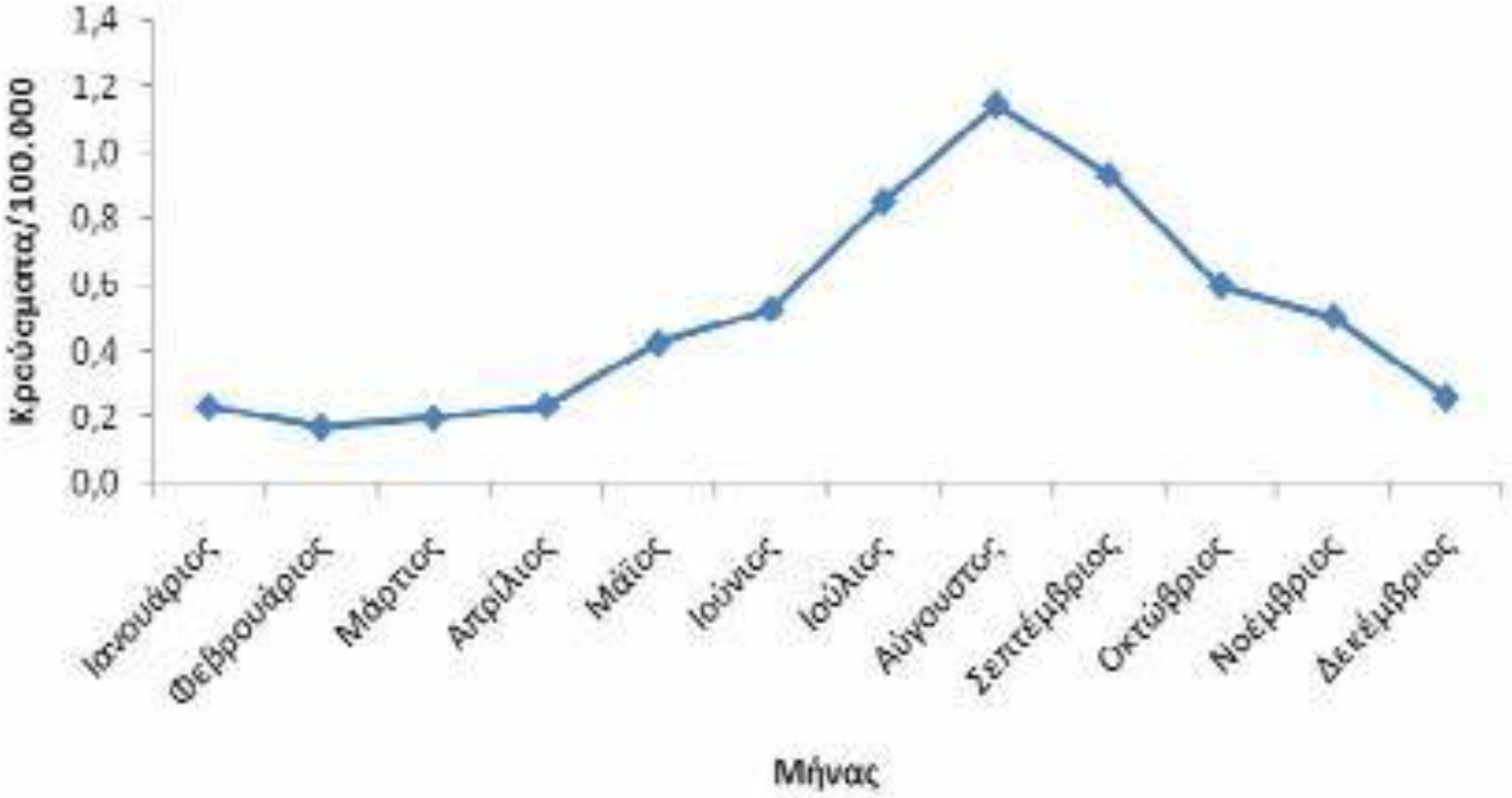
*Το β΄ εξάμηνο του 2010 ξεκίνησε προσπάθεια ενίσχυσης της σαλμονέλλωσης στο ΣΥΔΝ.

η μέση ετήσια δηλούμενη επίπτωση του νοσήματος στην Ελλάδα ήταν 6,1 κρούσματα ανά 100.000 πληθυσμού.

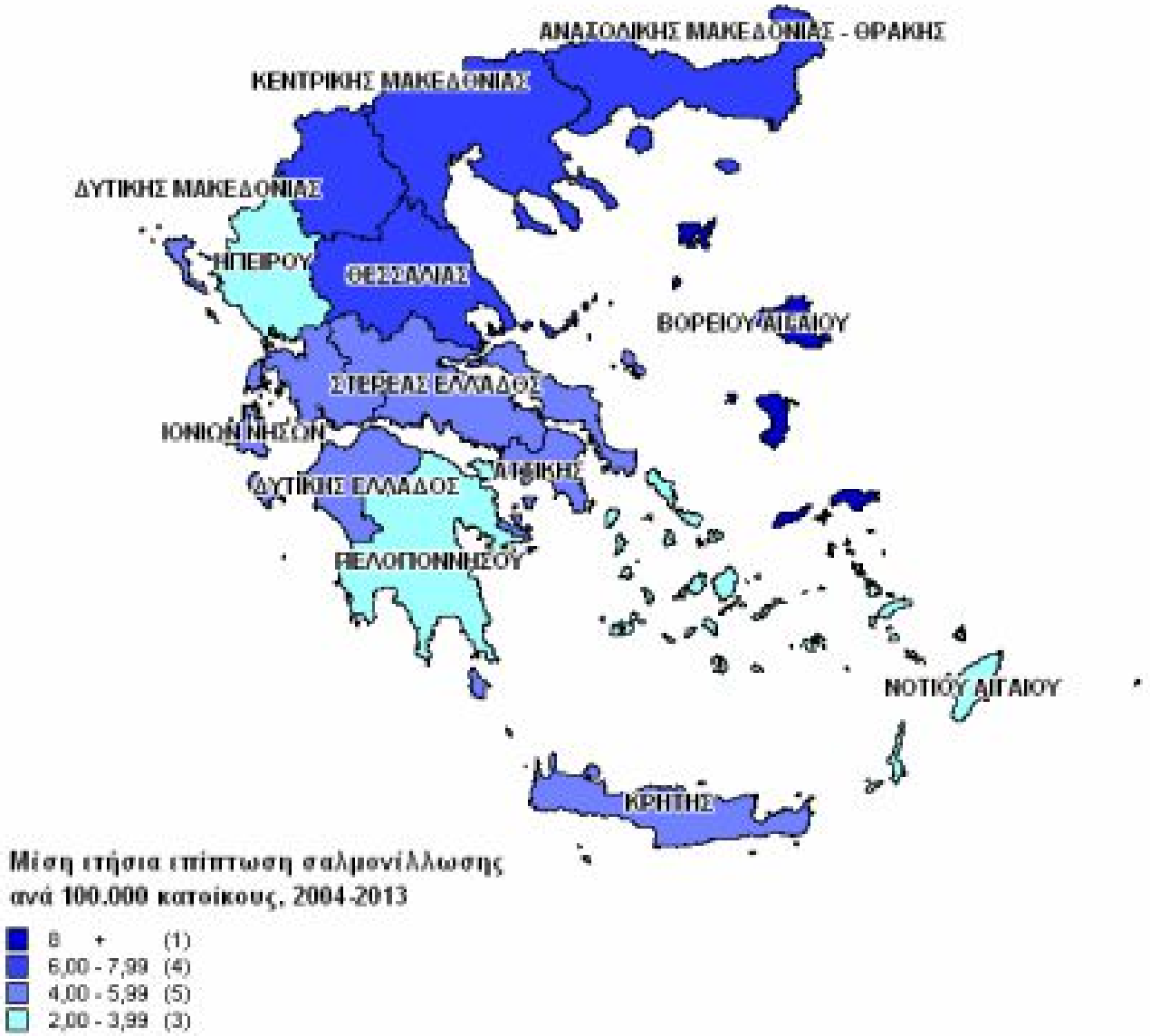
Γράφημα 1. Διαχρονική εξέλιξη της δηλούμενης επίπτωσης της μη τυφο-παρατυφικής σαλμονέλλωσης στην Ελλάδα, Σύστημα Υποχρεωτικής Δήλωσης Νοσημάτων, 2004-2013.
Σημειώνεται ότι το Β΄ εξάμηνο του 2010 ξεκίνησε προσπάθεια ενίσχυσης της σαλμονέλλωσης στο ΣΥΔΝ, που πιθανότατα εξηγεί την αύξηση της δηλούμενης επίπτωσης.



Γράφημα 2. Μέση ετήσια δηλούμενη επίπτωση (αριθμός κρουσμάτων/100.000 πληθυσμού) της μη τυφο-παρατυφικής σαλμονέλλωσης στην Ελλάδα ανά ηλικιακή ομάδα, Σύστημα Υποχρεωτικής Δήλωσης Νοσημάτων, 2004-2013.



Γράφημα 3. Μέση μηνιαία δηλούμενη επίπτωση (κρούσματα/100.000 πληθυσμού) της μη τυφο-παρατυφικής σαλμονέλλωσης στην Ελλάδα, Σύστημα Υποχρεωτικής Δήλωσης Νοσημάτων, 2004-2013.



Εικόνα 1. Μέση ετήσια επίπτωση της σαλμονέλλωσης ανά περιφέρεια της χώρας (κρούσματα/100.000 κατοίκους), Σύστημα Υποχρεωτικής Δήλωσης Νοσημάτων, 2004-2013.

Salmonellosis
Just the tip of the iceberg

ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

Salmonella infections are among the most common food-borne infections affecting humans in the EU. However, the reported case numbers are much lower than the actual number of circulating infections. ECDC has developed a tool that estimates the frequency of exposure to *Salmonella*, which is much closer to the true incidence of *Salmonella* in the population than the reported number.

For more information visit http://bit.ly/seroincidence-tool

The number of yearly reported cases (white) is represented by the tip of the iceberg, while the estimated frequency of exposure to *Salmonella* (orange) is shown as the rest of the iceberg.

1 Ireland 350 720 000
2 Romania 400 7 480 000
3 Greece 480 2 280 000
4 Denmark 1 680 420 000
5 Austria 1 800 1 000 000
6 Finland 2 800 370 000
7 Spain 3 400 28 460 000
8 Sweden 4 000 510 000
9 France 6 300 24 020 000
10 Italy 6 520 12 780 000
11 Netherlands 6 590 2 400 000
12 United Kingdom 10 400 5 900 000
13 Poland 16 000 20 980 000

Numbers are rounded to the nearest ten thousand. For some countries, cases were reported by year, and for others it is an average of two or more years depending on the years of serum collections.

Original article: Mølbak K, Simonsen J, Jørgensen C, Krogfelt K, Falkenhorst G, Ethelberg S, et al. Seroincidence of human infections with non-typhoid *Salmonella* compared with data from public health surveillance and food animals in 13 European countries. Clin Infect Dis. (2014) 59 (11): 1599-1606.

Record-High Antibiotic Sales for Meat and Poultry Production

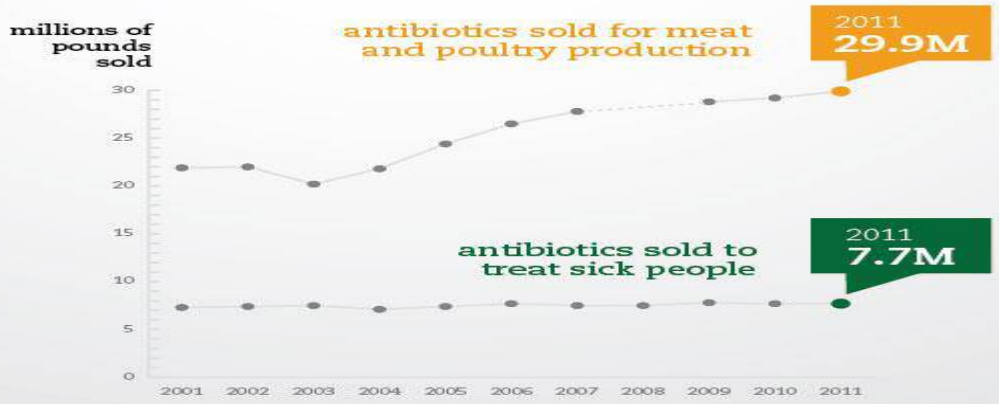
Antibiotic overuse is breeding new, resistant strains of bacteria that infect people. But industrial farms haven't gotten the message.

In 2011, 29.9 million pounds* of antibiotics were sold in the United States for meat and poultry production.

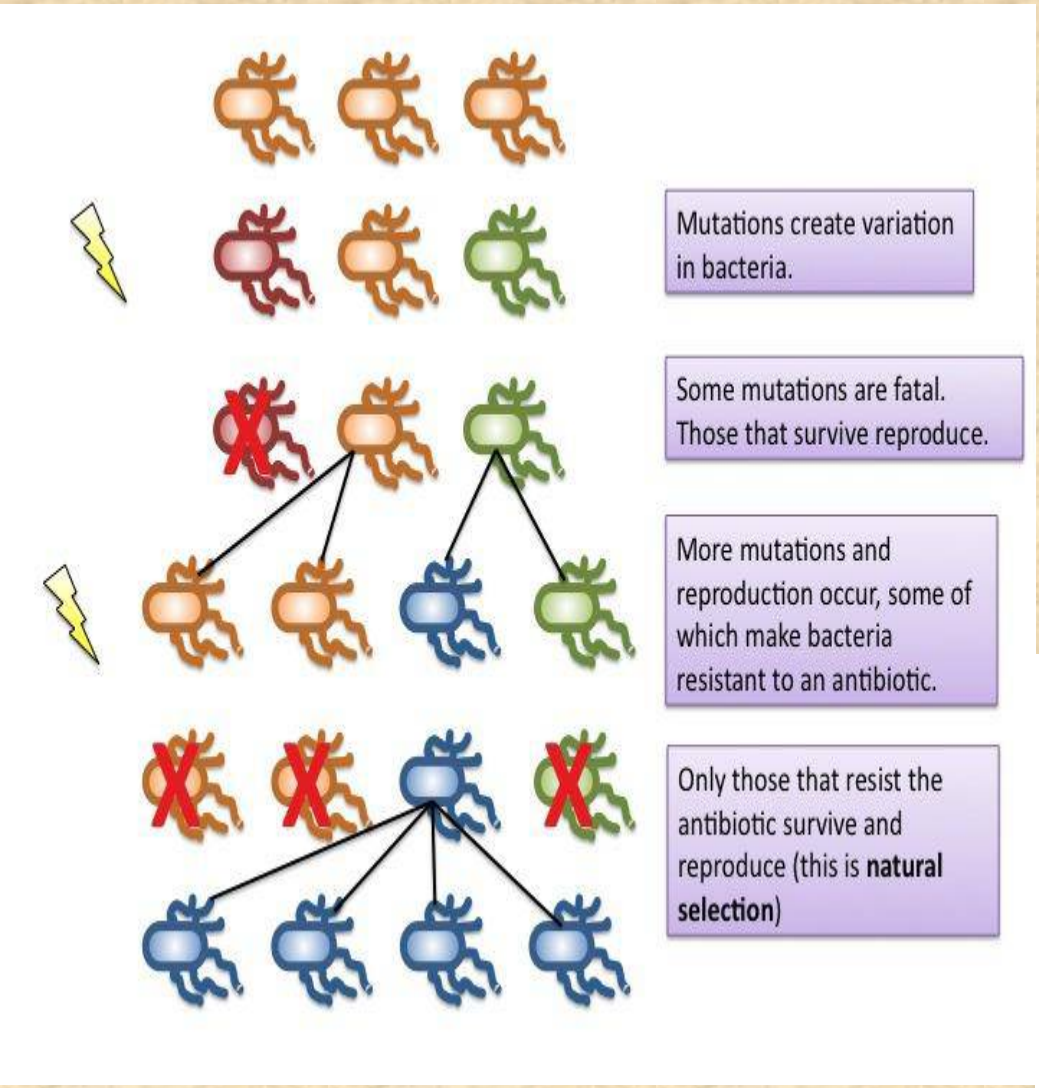
3.9 times greater

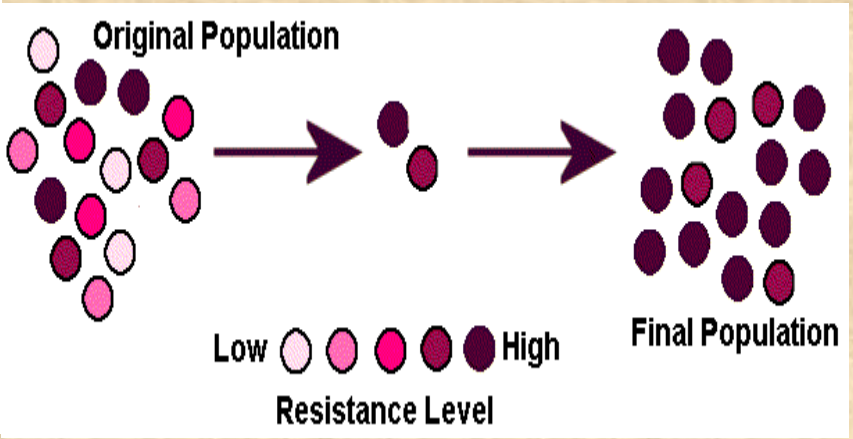
Yet, in the same period, only 7.7 million pounds of antibiotics were sold to treat sick people in the United States.

ON THE RISE



We need more detailed information on how widely antibiotics are being used to make animals grow faster and to compensate for overcrowded and unsanitary conditions.


Mutations create variation in bacteria.
Some mutations are fatal. Those that survive reproduce.
More mutations and reproduction occur, some of which make bacteria resistant to an antibiotic.
Only those that resist the antibiotic survive and reproduce (this is **natural selection**)


Original Population
Low
High
Resistance Level
Final Population

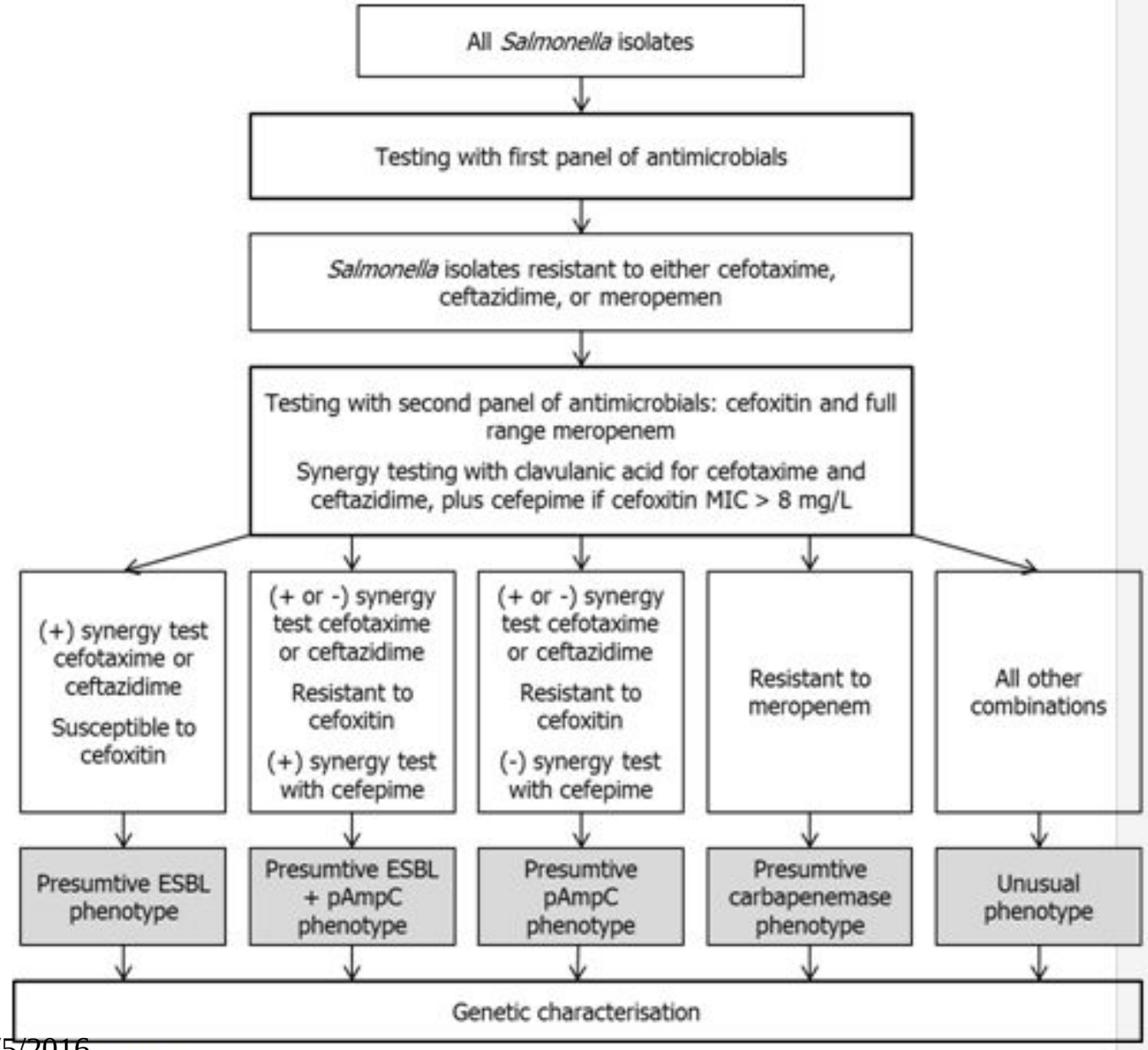
ECDC TECHNICAL DOCUMENT

EU protocol for harmonised monitoring of antimicrobial resistance in human *Salmonella* and *Campylobacter* isolates

April 2016

Class	Name (abbreviation*)	Surveillance objectives	Comments
First priority			
Aminoglycosides	Gentamicin (GEN)		
Aminopenicillins	Ampicillin (AMP)		
Amphenicols	Chloramphenicol (CHL)		
Carbapenems	Meropenem (MEM)		EUCAST recommend meropenem as it offers the best compromise between sensitivity and specificity in terms of detecting carbapenemase-producers
Cephalosporins	Cefotaxime (CTX)		May be insensitive for detection of ceftazidimase-type ESBLs
	Ceftazidime (CAZ)		Added to increase sensitivity of screening for full range of ESBL with diverse substrate specificities
Dihydrofolate reductase inhibitors	Trimethoprim (TMP)		Value as an epidemiological marker.
Macrolides	Azithromycin (AZM)		May be considered as a last resort drug for invasive salmonellosis.
Polymyxins	Colistin (COL)		Last resort drug in human medicine and extensively used in animal medicine. Plasmid-mediated resistance detected in *E. coli* and *Salmonella* in Europe in 2015. Its chemical properties however cause unreliable results with dilution and render it impossible to test with disk diffusion. Please follow the dilution method agreed between CLSI and EUCAST [10]. NB. Any laboratory that wants to report an isolate as resistant to colistin must get the result confirmed at a reference laboratory that is up to date with the latest method developments for testing of colistin.
Quinolones	Ciprofloxacin (CIP)/Pefloxacin (PEF)		Preferably test ciprofloxacin with broad MIC range.For disk diffusion, EUCAST recommend screening with pefloxacin[11] since ciprofloxacin is poor at detecting low-level fluoroquinolone resistance in *Salmonella* spp. with this methodand nalidixic acid is often not detecting plasmid-mediated fluoroquinolone resistance [12]. Only for isolates having the *aac(6')-Ib-cr* gene,pefloxacin does not work well.
Sulphonamides	Sulfamethoxazole (SMX)		Value as an epidemiological marker.
Tetracyclines	Tetracycline (TCY)		Used both in veterinary and human medicine.
	Tigecycline (TGC)		
Optional			
Aminopenicillins	Amoxicillin (AMX)		Alternative for testing and reporting if AMP not tested.
Carbapenems	Ertapenem (ETP)		Many human laboratories test for ertapenem so should be possible to report.
Cephalosporins	Ceftriaxone (CRO)		Alternative for cefotaxime with disk diffusion method as has similar spectrum of activity.
Combination drugs	Trimethoprim + sulfamethoxazole (co-trimoxazole) (SXT)		No need to test if the substances are tested separately.
Quinolones	Nalidixic acid (NAL)		For laboratories using disk diffusion,nalidixic acid (NAL) can be tested in addition to pefloxacin for easier identification of QRDR mutations (*gyr*and *par*) since such mutations may result in clinical treatment failure (Le Hello, Institut Pasteur Paris, personal communication, Sep 2015).

Figure 1. Schematic view of the proposed phenotypic testing for detection and confirmation of ESBL-, acquired AmpC, and carbapenemase-producing *Salmonella* spp.*



*Modified from EFSA [8]

Annex 1. EUCAST clinical breakpoints and epidemiological cut-off values for the priority list of antimicrobials to be tested for *Salmonella* spp. as of 15 Mar 2016

Antimicrobial	Criteria based on MIC dilution (mg/L)			Recommended concentration range[1] (mg/L) (number of wells)	Criteria based on disk diffusion (mm)			Disk load (µg)
	S≤	R>	ECOFF≤		S≥	R<	ECOFF≥	
First priority								
Ampicillin (AMP)	8.0	8.0	8.0	1-64 (7)	14	14	18	10
Azithromycin (AZM)	ND	ND	16[2]	2-64 (6)	ND	ND	12	15
Cefotaxime (CTX)	1.0[2]	2.0	0.5	0.25-4 (5), 0.25-64 (9)[4]	20[2]	17	20	5
Ceftazidime (CAZ)	1.0[2]	4.0	2.0	0.5-8 (5), 0.25-128 (10)[4]	22[2]	19	20	10
Chloramphenicol (CHL)	8.0	8.0	16.0	8-128 (5)	17	17	19	30
Ciprofloxacin (CIP)	0.06	0.06	0.064	0.015-8 (10)	NA	NA	NA	NA
Colistin (COL)	2.0	2.0	2.0[5]	1-16 (5)	NA	NA	NA	NA
Gentamicin (GEN)	2.0	4.0	2.0	0.5-32 (7)	17	14	16	10
Meropenem (MEM)	2.0	8.0	0.125[3]	0.03-16 (10)	22	16	27 (25)[3]	10
Nalidixic acid (NAL)	NA	NA	NA	NA	24	24	24	5
Sulfamethoxazole (SMX)	ND	ND	ND	8-1024 (8)	ND	ND	ND	100
Tetracycline (TCY)	ND	ND	8.0	2-64 (6)	ND	ND	17	30
Tigecycline (TGC)	1.0	2.0	1.0	0.25-8 (6)	ND	ND	16	15
Trimethoprim (TMP)	2.0	4.0	2.0	0.25-32 (8)	18	15	23	5
Second level testing ESBL-producers								
Cefepime (FEP)	1.0	4.0	ND		24	21	ND	30
Cefoxitin (FOX)	ND	ND	8.0[2]	0.5-64 (8)	19[2]	19	21	30
Optional								
Amoxicillin (AMX)	8.0	8.0	4.0		ND	ND	ND	10
Ceftriaxone (CRO)	1.0	2.0	ND		23[2]	20	ND	30
Ertapenem (ETP)	0.5	1.0	0.064 (0.125)[3]	0.015-2 (8)	25[2]	22	ND	10
Nalidixic acid (NAL)	ND	ND	16.0	4-128 (6)	ND	ND	16	30
Trimethoprim-sulfamethoxazole (SXT)	2.0	4.0	1.0		16	13	ND	1.25-23.75

1. From Commission Implementing Decision 2013/652/EU on the monitoring and reporting of antimicrobial resistance in zoonotic

WHONET
Greece

Last update: 10-4-2013

DATA

- Cumulative Results
- Salmonella-Shigella
- Anaerobes
- Mycobacterium tuberculosis
- Primary Health Care
- Medical Data Mining Association Rules

- ECDC Questionnaire 2013

EDUCATIONAL RESOURCES (in Greek)

- PowerPoint Presentations

INFORMATION

- Management team
- Participating hospitals
- Studies

WHONET SOFTWARE

- WhoNet Software 5.4

The *Greek System for the Surveillance of Antimicrobial Resistance* is a Public Health initiative operating in the framework of the scientific alliance between the *National School of Public Health* and the *Hellenic Center for Disease Control and Prevention*.

ΚΕΕΛΠΝΟ
ΚΕΝΤΡΟ ΕΛΕΓΧΟΥ ΚΑΙ ΠΡΟΛΗΨΗΣ ΝΟΣΗΜΑΤΩΝ (ΚΕΕΛΠΝΟ)
ΥΠΟΥΡΓΕΙΟ ΥΓΕΙΑΣ & ΚΟΙΝΩΝΙΚΗΣ ΑΛΛΗΛΕΓΓΥΗΣ
ΕΘΝΙΚΗ ΣΧΟΛΗ ΔΗΜΟΣΙΑΣ ΥΓΕΙΑΣ
ΚΕΝΤΡΙΚΟ ΕΡΓΑΣΤΗΡΙΟ ΔΗΜΟΣΙΑΣ ΥΓΕΙΑΣ

Hellenic Center for Disease Control and Prevention, Ministry of Health (HCDCP)
National School of Public Health (NSPH)

The **Greek System for the Surveillance of Antimicrobial Resistance** is a national network for continuous monitoring of bacterial antibiotic resistance in the Greek hospitals.

Its function is based on the assumption that the routine results of the antibiotic sensitivity tests performed daily in each hospital clinical laboratory should be considered as a major resource for antibiotic resistance surveillance.

Moreover and since the quality and compatibility of these data are in principle uncertain, our approach is to work in parallel, on both accessing the data and assessing its quality.

This is accomplished through the establishment of a quality control procedure and the adaptation of an electronic code and data format in all hospitals through the use of the WHONET software. The WHONET software was originally developed by WHO Collaborating Centre for Surveillance of Antibiotic Resistance in Boston USA and further developed in the Division of Emerging and other Communicable Diseases Surveillance and Control, WHO (WHO/EMC), Geneva, Switzerland. WHONET is distributed free of charge by WHO/EMC and facilitates the management of antibiotic susceptibility test results from routine clinical isolates. A full description of the software and its potentials has been published elsewhere [1-3].

The analysis of the information facilitates:

1. The understanding of the trends of resistance.
2. The detection of epidemics.
3. The differentiation of epidemic from endemic infections
4. The development of a national antibiotic policy.
5. The hierarchy of priorities for further studying the genetic and molecular mechanisms responsible for the emergence of resistance.

Moreover and since the acquisition of the data is performed automatically, no additional workload at the laboratory level is generally required, and thus the system

http://www.mednet.gr/whonet/

Μέθοδος διάχυσης δίσκων (Kirby Bauer) / EUCAST

Salmonella Species

% Resistance to Antibiotics by Main Serotype
(Disk Diffusion, CLSI Recommendations)
(January-December 2014)

S. Enteritidis (95 isolates)		S. Typhimurium (62 isolates)		S. monophasic Typhimurium (36 isolates)		Άλλοι ορότυποι (210 isolates)	
Antibiotic name	**%R**	**Antibiotic name**	**%R**	**Antibiotic name**	**%R**	**Antibiotic name**	**%R**
Ampicillin	1,1%	Ampicillin	12,9%	Ampicillin	54,3%	Ampicillin	4,0%
Amoxicillin/Clavulanic acid	0,0%	Amoxicillin/Clavulanic acid	0,0%	Amoxicillin/Clavulanic acid	0,0%	Amoxicillin/Clavulanic acid	0,5%
Cefotaxime	2,2%	Cefotaxime	0,0%	Cefotaxime	2,9%	Cefotaxime	1,0%
Ceftazidime	0,0%	Ceftazidime	0,0%	Ceftazidime	2,9%	Ceftazidime	0,5%
Amikacin	0,0%	Amikacin	0,0%	Amikacin	0,0%	Amikacin	0,0%
Gentamicin	2,9%	Gentamicin	4,3%	Gentamicin	0,0%	Gentamicin	0,0%
Tobramycin	0,0%	Tobramycin	1,6%	Tobramycin	0,0%	Tobramycin	0,5%
Netilmicin	0,0%	Netilmicin	1,6%	Netilmicin	0,0%	Netilmicin	0,5%
Streptomycin	1,1%	Streptomycin	16,1%	Streptomycin	57,1%	Streptomycin	4,0%
Trimethoprim	0,0%	Trimethoprim	1,6%	Trimethoprim	5,7%	Trimethoprim	2,5%
Tetracycline	1,1%	Tetracycline	27,4%	Tetracycline	82,9%	Tetracycline	4,5%
Chloramphenicol	0,0%	Chloramphenicol	8,1%	Chloramphenicol	2,9%	Chloramphenicol	1,0%
Nalidixic acid	8,8%	Nalidixic acid	1,6%	Nalidixic acid	0,0%	Nalidixic acid	4,0%
Ciprofloxacin	0,0%	Ciprofloxacin	0,0%	Ciprofloxacin	0,0%	Ciprofloxacin	0,5%

Salmonella Species

Main Resistance Phenotypes

(Intermediate resistant isolates are grouped with sensitive)

(January-December 2014)

S. Enteritidis (No tested 77)					
Resistance profile				**No of isolates**	**%**
Sensitive				69	89,6%
	Nal			7	9,1%
Amp		Str	Tcy	1	1,3%

S. Typhimurium (No tested 50)							
Resistance profile						**No of isolates**	**%**
Sensitive						37	74,0%
				Tcy		2	4,0%
			Str			1	2,0%
Amp				Tcy		1	2,0%
				Tcy	Tmp	1	2,0%
			Str	Tcy		2	4,0%
Amp			Str	Tcy		2	4,0%
Amp	Chl			Tcy		1	2,0%
Amp	Chl		Str	Tcy		2	4,0%
Amp	Chl	Nal	Str	Tcy		1	2,0%

S. monophasic Typhimurium (No tested 26)						
Resistance profile					**No of isolates**	**%**
Sensitive					2	7,7%
			Tcy		11	42,3%
		Str		Tmp	1	3,8%
Amp		Str			1	3,8%
Amp		Str	Tcy		10	38,5%
Amp	Chl	Str	Tcy		1	3,8%

ΑΝΑΔΡΟΜΙΚΗ ΜΕΛΕΤΗ ΜΗΧΑΝΙΣΜΩΝ ΑΝΤΟΧΗΣ ΣΕ ΚΕΦΑΛΟΣΠΟΡΙΝΕΣ 3ης ΓΕΝΙΑΣ (ESCs) ΣΕ ΣΤΕΛΕΧΗ ΣΑΛΜΟΝΕΛΛΑΣ ΑΠΟ ΑΝΘΡΩΠΟ ΚΑΙ ΠΟΥΛΕΡΙΚΑ, 2008-2014

Τρυφινοπούλου Κυριακή[1], Μανδηλαρά Γεωργία[2], Βαλκάνου Ελένη[3], Σμπιράκη Αφροδίτη[3], Γιακκούπη Παναγιώτα[4], Καραδήμας Κλέων, [2] Βατόπουλος Αλκιβιάδης[2,4]

1. EUPHEM Fellow -ΚΕΕΛΠΝΟ
2. Εθνικό Κέντρο Αναφοράς Σαλμονελλών, Σιγκελλών, ΕΣΔΥ/ ΚΕΔΥ_ΚΕΕΛΠΝΟ
3. Κτηνιατρικό Εργαστήριο Χαλκίδας
4. Εργαστήριο Νοσοκομειακών Λοιμώξεων και Μικροβιακής Αντοχής, ΕΣΔΥ/ΚΕΔΥ-ΚΕΕΛΠΝΟ

EPIET & EUPHEM

HCDCP
HELLENIC CENTER FOR DISEASE CONTROL & PREVENTION
MINISTRY OF HEALTH
NATIONAL SCHOOL of PUBLIC HEALTH
PUBLIC HEALTH LABORATORIES NETWORK
CENTRAL PUBLIC HEALTH LABORATORY

Ministry of Rural Development and Food
Veterinary Laboratory of Chalkis

Επίπεδα αντοχής σε ESCs στην Ευρώπη (17 χώρες), όλοι οι ορότυποι

Humans				
EU-total	1.4 % (0.3 - 4.2%)			
Food-producing animals				
EU-total	**Ωοπ. 1.2%** **Κρεοπ. 8%** **Αναπαρ. 1.9%**	0.5%	1.2%	0%
Foods				
EU-total	10.1%	4.7%	0.9%	0%

Based on " European Union Summary Report (EUSR) on Antimicrobial Resistance in zoonotic and indicator bacteria from humans, animals and food in 2013"

Ανίχνευση ESBLs & AmpC **στην** *Salmonella* **από ζώα/ τρόφιμα ζωικής προέλευσης, Ευρώπη** 2001

- Πουλερικά και κρέας πουλερικών
  - CTX-M-1,-2,-14,-32
  - TEM-20,-52
  - SHV-2,-12
  - CMY-2
- Κρεοπαραγωγά και ωοπαραγωγά πουλερικά
  - CTX-M-9
- Χοίροι
  - SHV-12
- Διάφορα ζώα και τρόφιμα ζωικής προέλευσης
  - CTX-M-1, -15
  - TEM-20, -52
  - CMY-2

Adapted from Scientific opinion on the public health risks of bacterial strains producing ESBLs and/or AmpC β-lactamases in food and food-producing animals, EFSA Journal 2011;9(8):2322

Salmonella ESC- **Ελλάδα**

- Πρώτα 3 κρούσματα →S. Typhimurium
  - 1994, SHV-5
  - 1996, CTX-M-5
  - 1997, CTX-M-6

Tzouvelekis L et al, JAC 1998;42:273-275

- 3 επιπλέον κρούσματα
  - 2000, S.Brandenburg, SHV-5
  - 2002, S. Hadar, TEM-52 & S. Blockley, TEM-52

- S. Virchow ESCs-κρέας πουλερικών
  - 2001, CTX-M-32

Politi L et al, JCM 2005;43:3453-3456

Σκοπός:

→ προσδιορισμός γονιδίων παραγωγής ESBL και AmpC σε στελέχη *Salmonella enterica* από άνθρωπο και πουλερικά που συλλέχθηκαν στην Ελλάδα από τον Ιανουάριο 2008-Δεκέμβριο 2014.

Υλικά και Μέθοδοι

3,199 **καλλιεργήματα** *Salmonella enterica*

- 2,556 **κλινικά**
  - Εθνικό Κέντρο Αναφοράς Σαλμονελλών
    - Διαγνωστικά εργαστήρια ιδιωτικά, δημόσια, νοσοκομεία

- 643 **από τρόφιμα**(132) & **ζώα παραγωγής τροφίμων**(511)
  - Κτηνιατρικό Εργαστήριο Χαλκίδας
    - Επίσης προγράμματα επιτήρησης
    - Εθνικά προγράμματα ελέγχου
    - EU baseline studies

- Οροτυπία: Σχήμα Kauffmann-White-Le Minor
- Έλεγχος Αντοχής σε αντιβιοτικά : **Μέθοδος διάχυσης δίσκων** & **μέθοδος** Broth microdilution (NRL-Vet, 2009-2011, 2014) (CLSI)
- Διάκριση ESBL, pAmpC or ESBL+pAmpC φαινότυπο: Double-disk synergy test (DDST) **αξιολογήθηκε μαζί με ευαισθησία σε** cefoxitine & cefepime
- Χαρακτηρισμός γονιδίων of bla: PCR με εκκινητές για SHV, TEM, CTX-M, IBC/GES, **πλασμιδιακά** AmpC **γονίδια**

Αποτελέσματα

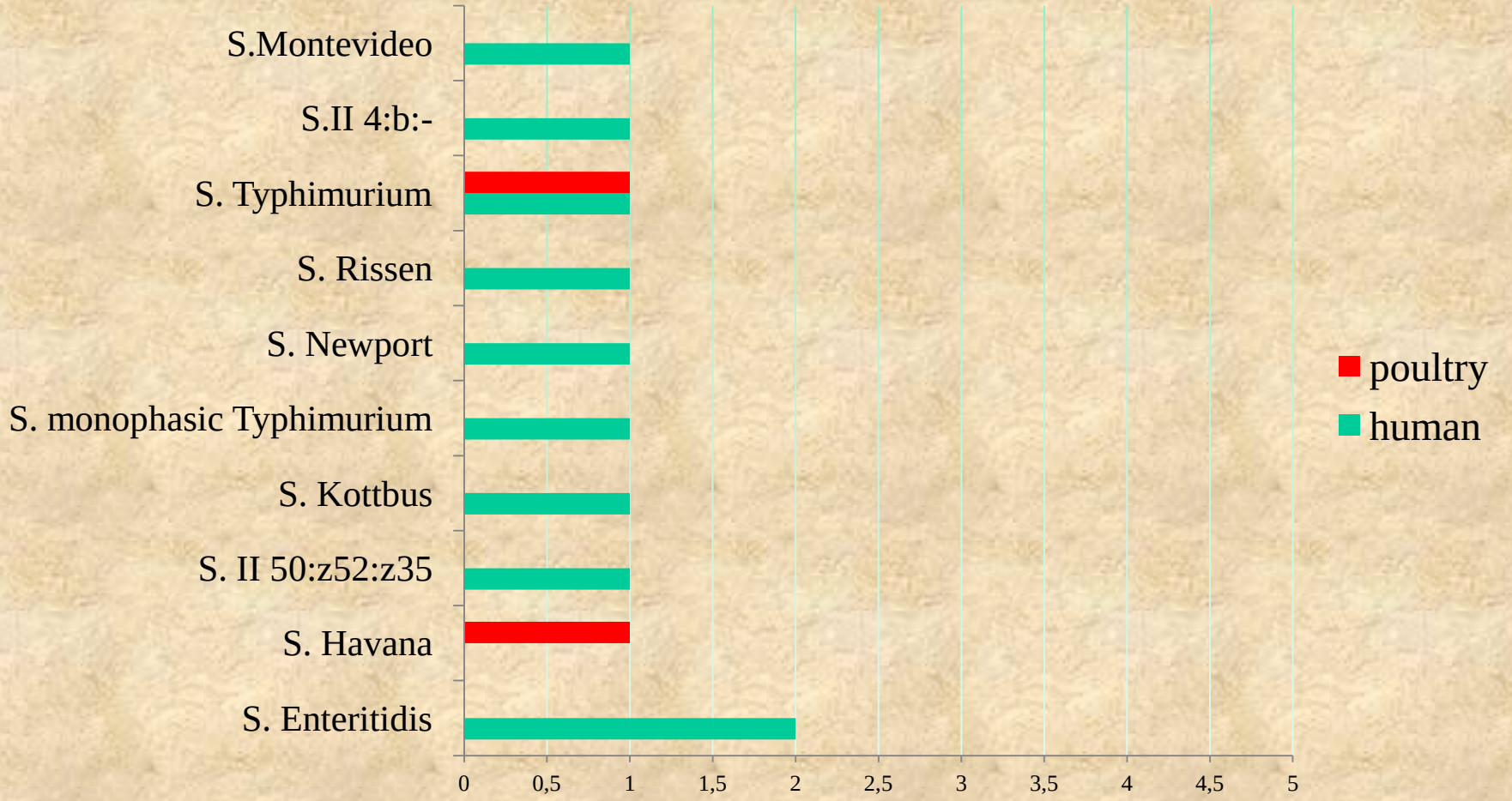
ESC **ανθεκτικά -κλινικά**

	ESC-resistant Salmonella	Salmonella tested for AS	(%)
2008	1	483	0,21
2009	0	377	0,00
2010	0	244	0,00
2011	2	398	0,50
2012	3	338	0,89
2013	3	335	0,90
2014	2	381	0,52
Total	10	2556	0,39

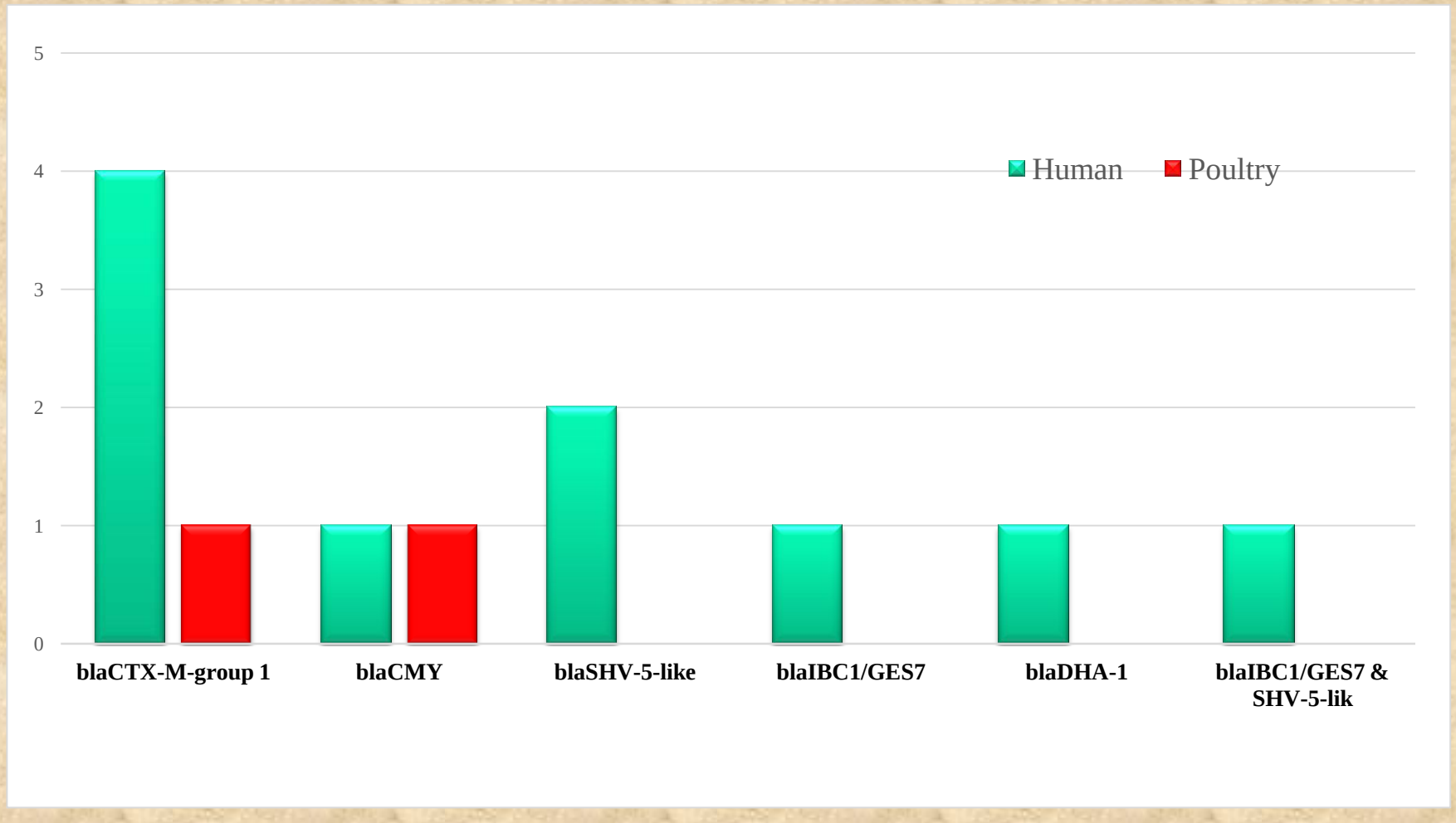
ESC **ανθεκτικά-τρόφιμα- ζώα παραγωγής τροφίμων**

	ESC-res Salmonella	Salmonella tested for AS	%	Total Salmonella isolates
2008	0	47 (A)	0	189
2009	0	73 (A)	0	399
2010	0	93 (36 A, 57 F)	0	360
2011	1	62 (49 A, 13 F)	1,61	211
2012	1	106 (89 A, 17 F)	0,94	191
2013	0	87 (72 A, 15 F)	0	270
2014	0	145 (115 A, 30 F)	0,69	227
Total	2	613	0,32	1847

Ορότυποι *Salmonella enterica* **με αντοχή σε** ESCs



ESCs **γονίδια αντοχής σε καλλιεργήματα** *Salmonella enterica*



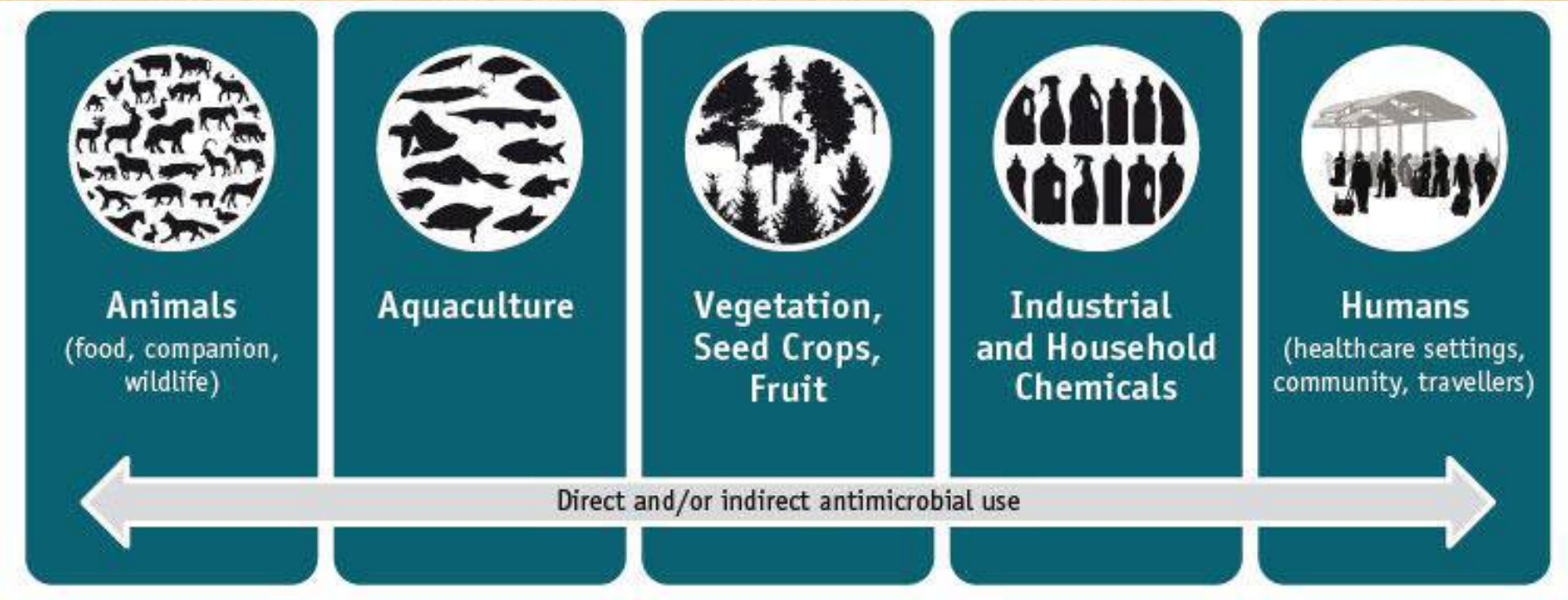
Προφίλ αντοχής

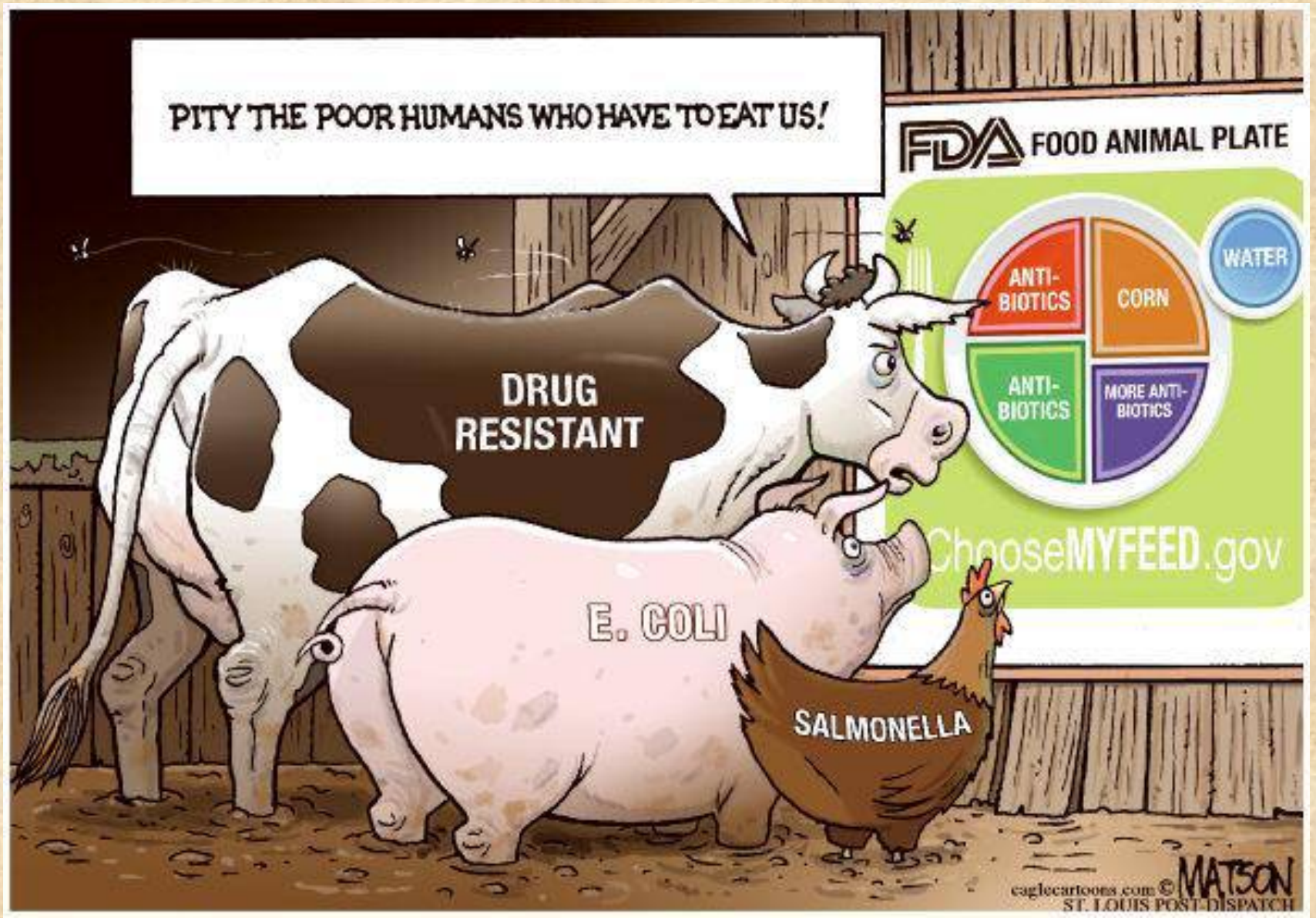
Serotype	Origin	β-lactamase type	Ctx	Chl	Cip Na	An Tb	K	Str	Su	Tet	Tmp
Montevideo	human	CMY-2	R								
Rissen	human	CTX-M-3	R								
Havana	poultry	CTX-M-1	R								
Enteritidis	human	SHV-5-like	R							R	
Typhimurium	poultry	CMY-2	R						R	R	
Monophasic Typhimurium	human	SHV-5-like	R					R	R	R	
Enteritidis	human	CTX-M-1	R					R	R	R	
Typhimurium	human	CTX-M-15	R			R	R		R		R
II 4:b:-	human	CTX-M-15	R			R	R	R	R	R	R
Newport	human	DHA-1	R	R			R	R	R	R	R
II 50:z52:z35	human	IBC1/GES7	R			R	R	R	R	R	R
Kottbus	human	SHV-5 & IBC1/GES7	R			R	R	R	R	R	R

Συμπεράσματα

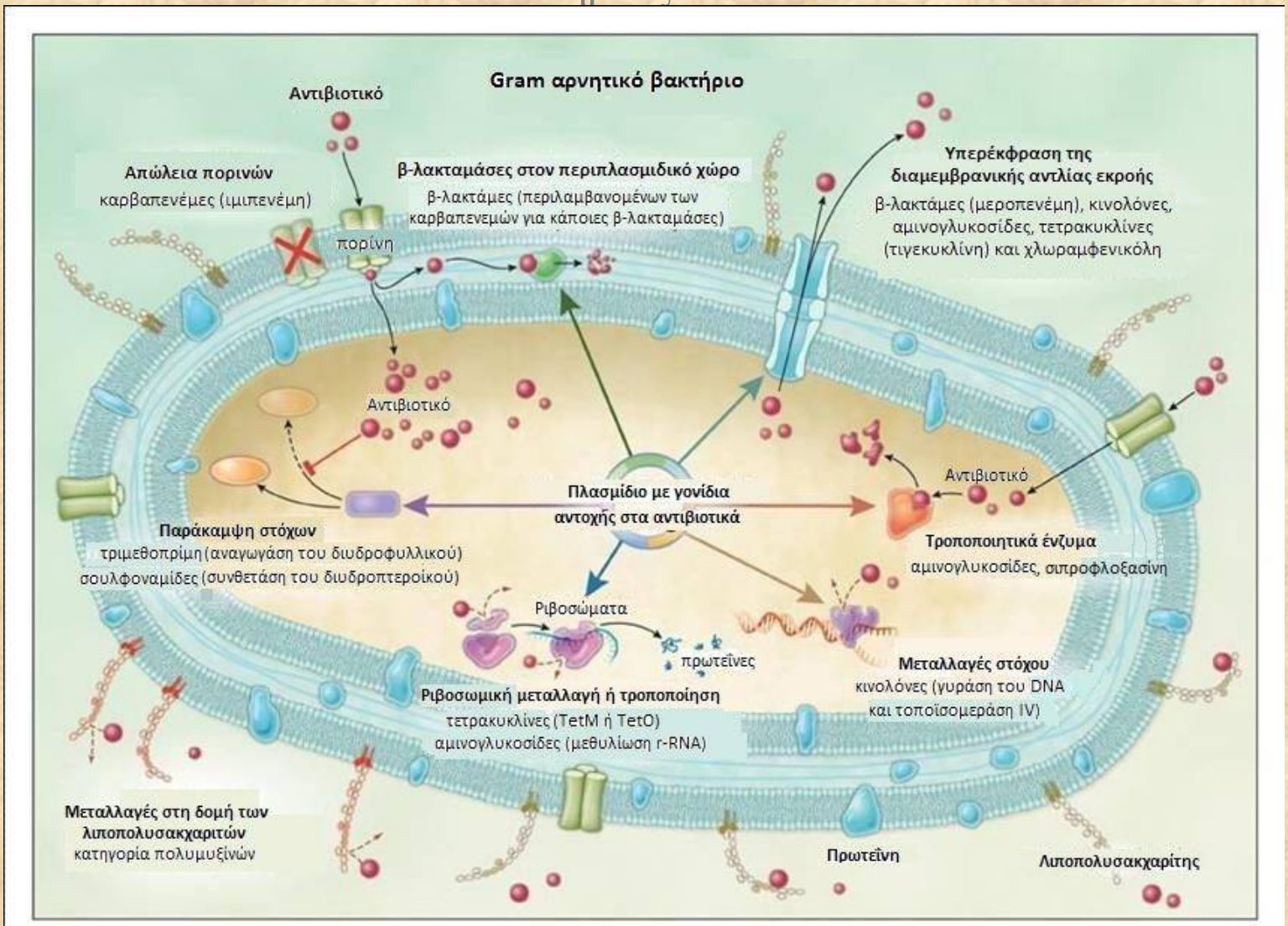
- Η αντοχή σε ESCs σε κλινικά / από πουλερικά καλλιεργήματα *Salmonella enterica* στην Ελλάδα είναι σπάνια και σποραδική
- Δεν παρατηρήθηκε ταυτόχρονη αντοχή σε cefotaxime και ciprofloxacin
- Πρώτο καλλιέργημα ESBL producing- monophasic S.Typhimurium στην Ελλάδα
  - Ευρωπαϊκός κλώνος ASSuT MDR προφίλ
- Αντοχή σε ESC → ποικιλία οροτύπων
  - Ποικιλία blagene
  - Εξελισσόμενη κατάσταση → πιθανότητα επιπλέον διασποράς →ΕΠΙΤΗΡΗΣΗ
  - Ανάγκη “One Health Approach”

One Health Approach




PITY THE POOR HUMANS WHO HAVE TO EAT US!
FDA FOOD ANIMAL PLATE
ANTI-BIOTICS
CORN
WATER
ANTI-BIOTICS
MORE ANTI-BIOTICS
ChooseMYFEED.gov
DRUG RESISTANT
E. COLI
SALMONELLA
caglecartoons.com © MATSON
ST. LOUIS POST-DISPATCH

Μηχανισμοί αντοχής των Gram-αρνητικών βακτηριδίων και αντιβιοτικά που επηρεάζονται:



Τροποποιημένο από: Peleg A et al, N Engl J Med, 2010

Μηχανισμοί δράσης αντιβιοτικών

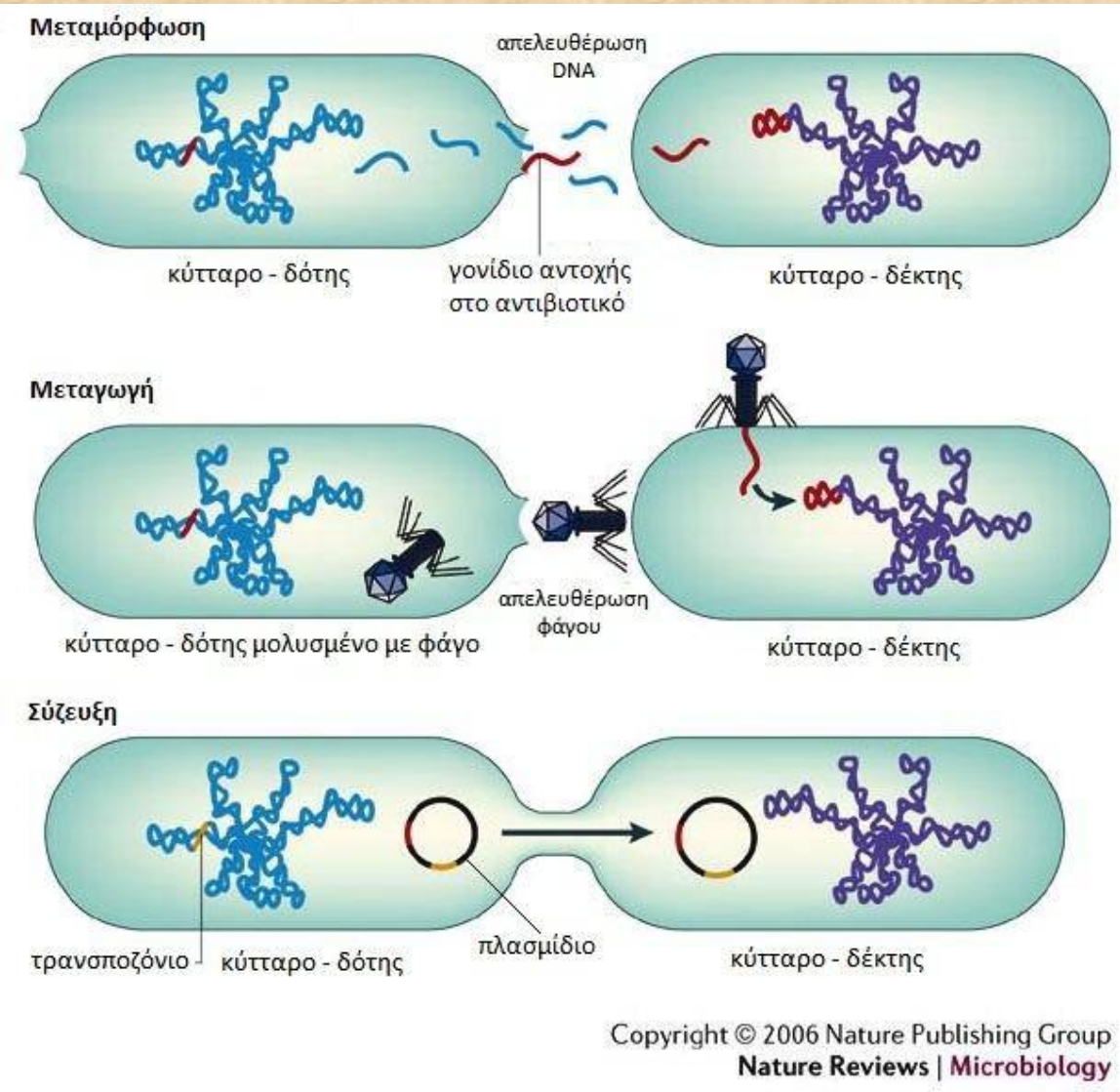
ΟΜΑΔΕΣ ΑΝΤΙΒΙΟΤΙΚΩΝ

Μηχανισμός	**Ομάδα Αντιβιοτικών**
Αναστολή σύνθεσης κυτταρικού τοιχώματος	Β-λακταμικά Γλυκοπεπτίδια
Αναστολή πρωτεϊνοσύνθεσης	Αμινογλυκοσίδες Μακρολίδες, Τετρακυκλίνες, Χλωραμφαινικόλη
Αντιμεταβολίτες	Σουλφοναμίδες, Τριμεθοπρίμη
Αναστολείς DNA γυράσης - τοποϊσομεράσης	Κινολόνες

Μικροβιακή αντοχή

Μηχανισμοί	
Διαπερατότητα και ενεργός αποβολή	Πορίνες Γενική Ειδική
Καταστροφή αντιβιοτικού	Ένζυμα (παραδείγματα) Β-λακταμάσες Τροποποιούντα τις αμινογλυκοσίδες
Αλλαγή στον στόχο	Γύραση

Οριζόντια μεταφορά γενετικού υλικού



Εποχιακή διακύμανση S. Enteritidis (% **του συνόλου) ΕΚΑΣΣ,** 2014-2015

	ΙΑΝΟΥΑΡΙΟΣ	ΦΕΒΡΟΥΑΡΙΟΣ	ΜΑΡΤΙΟΣ	ΑΠΡΙΛΙΟΣ	ΜΑΙΟΣ	ΙΟΥΝΙΟΣ	ΙΟΥΛΙΟΣ	ΑΥΓΟΥΣΤΟΣ	ΣΕΠΤΕΜΒΡΙΟΣ	ΟΚΤΩΒΡΙΟΣ	ΝΟΕΜΒΡΙΟΣ	ΔΕΚΕΜΒΡΙΟΣ	
2014	3	1	3	3	7	6	19	27	8	6	6	6	
	13	8	17	22	28	26	66	107	58	20	23	15	
2015	3	2	3	2	6	12	16	20	19	37	34	8	
	10	7	9	16	29	40	64	84	60	74	54	29	