



IZSAM G. CAPORALE  
TERAMO



*Campylobacter*

Laboratorio Nazionale di Riferimento

## Aggiornamenti dal workshop EURL Campylobacter

Uppsala Settembre 2014

G. Garofolo, E. Di Giannatale

*Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise 'G. Caporale'  
Teramo, 26 novembre 2014*

*Centro Internazionale per la Formazione e l'Informazione Veterinaria "Francesco Gramenzi»*



# DG Sanco workshop conclusioni



## Incidenza

- Studio sierologico stima incidenza 676X100,000 abitanti



## Impatto

- Campylobacteriosi è una malattia ad alto impatto in EU – Casi umani e DALY's



## Misure di controllo

- Il rapporto sui costi benefici delle misure di controllo sono risultate positive tranne La macellazione anticipata – economicamente svantaggiosa



# Annual epidemiological report 2014 – food- and waterborne diseases and zoonoses

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Number and rates of confirmed campylobacteriosis reported cases, EU/EEA,

Country	2012		2011				2010		2009		2008			
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate		
Austria	Y	C	4 992	4 710	56.02	57.23	5129	61.03	4 404	52.58	4502	53.88	4280	51.45
Belgium	N	C	6 607	6 607	-	-	7 716	-	6 047	-	5 697	-	5 111	-
Bulgaria	Y	A	97	97	1.32	1.45	73	0.99	6	0.08	26	0.35	19	0.25
Cyprus	Y	C	68	68	7.89	7.81	62	7.38	55	6.72	37	4.64	23	2.96
Czech Republic	Y	C	18 412	18 287	174.08	177.15	18743	178.74	21 075	201.45	20 259	194.33	20 067	194.02
Denmark	Y	C	3 720	3 720	66.66	67.26	4060	73.01	4 037	72.94	3 353	60.84	3470	63.37
Estonia	Y	C	268	268	20.09	19.75	214	16.02	197	14.73	170	12.69	154	11.48
Finland	Y	C	4 251	4 251	78.70	81.29	4 267	79.38	3 944	73.70	4 050	76.04	4 453	84.01
France	N	C	5 081	5 079	-	-	5 538	-	4 324	-	3 956	-	3 424	-
Germany	Y	C	62 880	62 504	76.54	78.19	70 812	86.82	65 110	79.78	62 787	76.74	64 731	78.90
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	6 384	6 367	64.39	67.56	6 121	62.36	7 180	72.88	6 579	66.62	5 516	55.72
Ireland	Y	C	2 392	2 391	52.17	49.31	2 433	53.23	1 660	37.15	1 810	40.67	1 752	39.30
Italy	N	C	774	774	-	-	468	-	457	-	531	-	265	-
Latvia	Y	C	8	8	0.39	0.39	7	0.34	1	0.05	0	0.00	0	0.00
Lithuania	Y	C	917	917	30.53	31.76	1 124	36.83	1 095	34.85	812	25.51	762	23.72
Luxembourg	Y	C	581	581	110.70	109.58	704	137.54	600	119.51	523	105.98	439	90.79
Malta	Y	C	220	214	51.25	52.81	220	53.01	204	49.27	132	32.12	77	18.88
Netherlands	N	C	4 248	4 248	-	-	4 408	-	4 322	-	3 782	-	3 341	-
Poland	Y	C	431	431	1.12	1.10	354	0.92	367	0.96	359	0.94	270	0.71
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	92	92	0.46	0.46	149	0.75	175	0.87	254	1.26	2	-
Slovakia	Y	C	5 844	5 704	105.55	105.14	4 565	84.66	4 476	83.04	3813	70.85	3 064	57.00
Slovenia	Y	C	963	963	47.83	49.62	998	48.68	1 022	49.93	952	46.84	898	44.67
Spain	N	C	5 488	5 488	-	-	5 469	-	6 340	-	5 106	-	5 160	-
Sweden	Y	C	7 901	7 901	83.32	84.39	8 214	87.24	8 001	85.66	7 178	77.55	7 692	83.76
United Kingdom	Y	C	72 578	72 578	115.21	113.95	72 150	115.34	70 298	113.25	65 043	105.61	55 609	90.97
<b>EU Total</b>	-	-	<b>215 211</b>	<b>214 268</b>	<b>68.57</b>	<b>68.30</b>	<b>223 998</b>	<b>71.77</b>	<b>215 397</b>	<b>69.63</b>	<b>201 711</b>	<b>65.64</b>	<b>190 579</b>	<b>67.26</b>
Iceland	Y	C	60	60	18.78	19.01	123	38.62	55	17.32	74	23.17	98	31.07
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	2	5.66
Norway	Y	C	2 933	2 933	58.83	59.15	3 005	61.07	2 682	55.21	2 848	59.34	2 875	60.69
<b>EU/EEA Total</b>	-	-	<b>218 210</b>	<b>217 261</b>	<b>68.35</b>	<b>68.06</b>	<b>227 126</b>	<b>71.54</b>	<b>218 134</b>	<b>69.33</b>	<b>204 633</b>	<b>65.48</b>	<b>193 554</b>	<b>67.09</b>



Secondo una stima dell'EFSA, il costo della campilobatteriosi per i sistemi sanitari nonché in termini di perdita di produttività nell'UE è di circa 2,4 miliardi di euro all'anno.

ASR: Age-standardised rate  
Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; -: No report; U: Unspecified.

Source: European Centre for Disease Prevention and Control. Annual epidemiological report 2014 – food- and waterborne diseases and zoonoses. 2014

© European Centre for Disease Prevention and Control, 2014.





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# Current and future Burden of Communicable Diseases in the European Union and EEA/EFTA countries (BCoDE)



I **DALY (Disability Adjusted Life Years)** sono un indicatore dell'impatto globale di uno o più fattori di rischio. Vengono espressi come gli anni cumulativi di vita persi a causa di morbosità, mortalità e disabilità.

$$= \text{YLD} + \text{YLL}$$

Anni vissuti con malattia o disabilità      Anni di vita persi



1

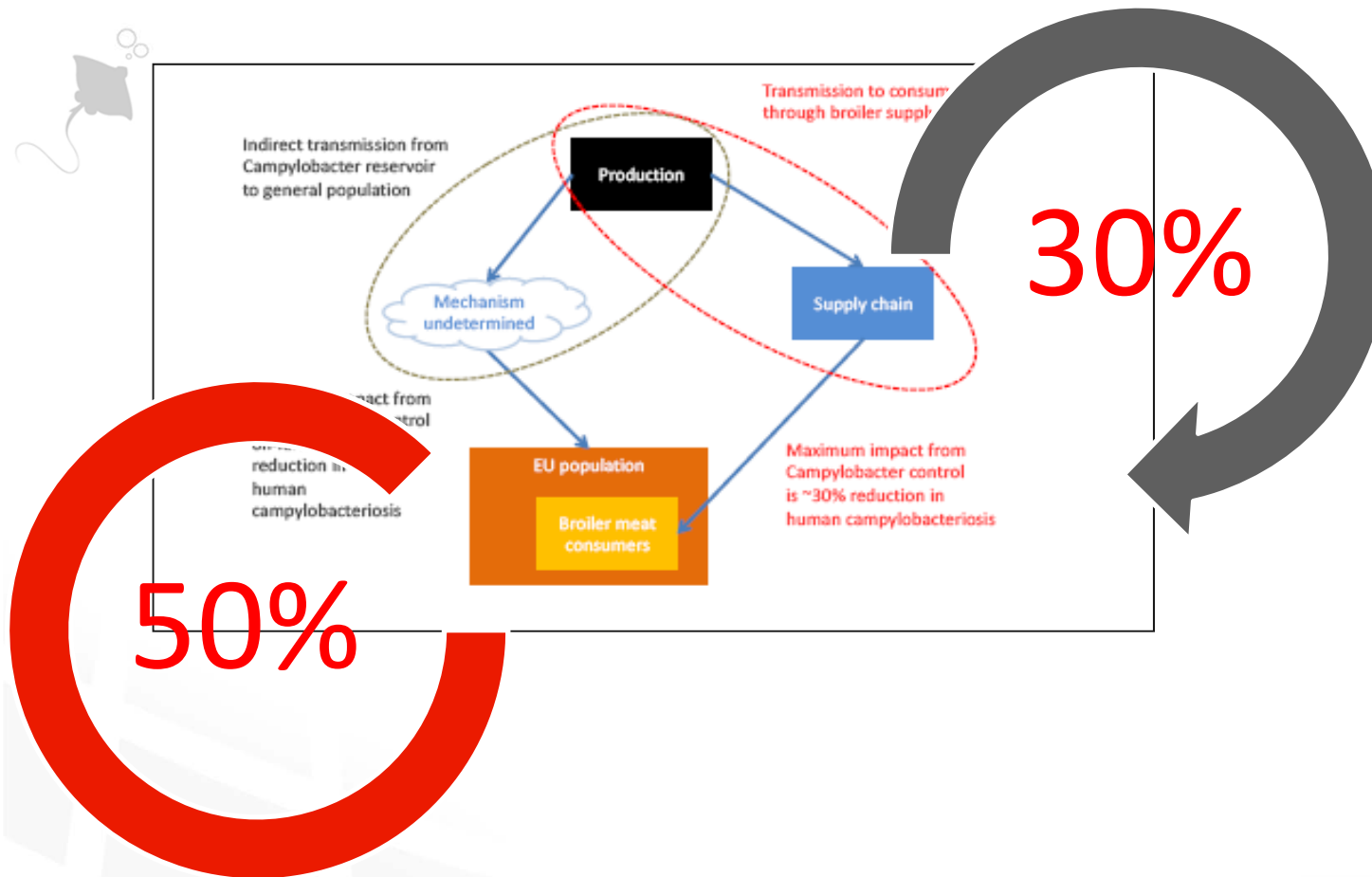
Influenza

6

Campylobacteriosi



# Campylobacteriosi





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## Analysis of the costs and benefits of setting certain control measures for reduction of *Campylobacter* in broiler meat at different stages of the food chain

Final Report

# Cost-effectiveness of individual controls

ID	Name	Reduction in incidence (%)	EU cost of control € million	EU cost of illness saved € million	EU Net cost per DALY averted €
F1	Enhanced Biosecurity	44%	36.7	333.8	-6,102
F2	Early Slaughter	15%	288.1	116.1	10,154
F3	No Thinning	12%	43.6	87.4	-3,438
F4	Vaccination	64%	297.7	478.8	-2,594
F5	Bacteriocins	64%	297.7	478.8	-2,594
S1	Best practice hygiene	23%	54.0	166.1	-4,626
S2	Chemical Decontamination	60%	116.1	442.9	-5,060
S3	Freezing (2-3 weeks)	93%	346.5	682.9	-3,377
S4	Hot Water	70%	272.2	516.8	-3,245
S5	UV Irradiation	100%	341.3	738.2	-3,687

A report submitted by ICF GHK  
in association with ADAS  
Date: 14 August 2012  
Job Number: 30258939





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# Riduzione prevalenza nel pollame del 50%

Table 8.3 Summary costs of *Campylobacter* control strategy CS1a

Control name and (efficacy %)	Reduction in EU incidence (%)	Annual cost per DALY avoided		Availability	Industry impact	Consumer impact
		Lower estimate	Upper estimate			
F1 Enhanced Biosecurity (40%)	59%	€1412	€2118			
T1 On-farm Testing						
S2 Chemical Decontamination (40%)						
T2 Post slaughter Testing						

91-136 milioni di euro

Table 8.4 Summary costs of *Campylobacter* control strategy CS1b

Control name and (efficacy %)	Reduction in EU incidence (%)	Annual cost per DALY avoided		Availability	Industry impact	Consumer impact
		Lower estimate	Upper estimate			
F1 Enhanced Biosecurity (70%)	56%	€581	€872			
T1 On-farm Testing						
T2 Post slaughter Testing						

36-54 milioni di euro

Table 8.6 Summary costs of *Campylobacter* control strategy CS1d

Control name and (efficacy %)	Reduction in EU incidence (%)	Annual cost per DALY avoided		Availability	Industry impact	Consumer impact
		Lower estimate	Upper estimate			
F1 Enhanced Biosecurity (55%)	57%	€866	€1298			
T1 On-farm Testing						
S1 Best Practice Hygiene (25%)						
T2 Post slaughter Testing						

54-80 milioni di euro





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# Riduzione prevalenza nel pollame del 90%

Table 8.7 Summary costs of *Campylobacter* control strategy CS2a

Control name and (efficacy %)	Reduction in EU incidence (%)	Annual cost per DALY avoided		Availability	Industry impact	Consumer impact
		Lower estimate	Upper estimate			
F1 Enhanced Biosecurity (40%)	93%	€1589	€2383			
T1 On-farm Testing						
S3 Freezing (2-3 weeks) (90%)						
T2 Post slaughter Testing						

160-239 milioni di euro

Table 8.8 Summary costs of *Campylobacter* control strategy CS2b

Control name and (efficacy %)	Reduction in EU incidence (%)	Annual cost per DALY avoided		Availability	Industry impact	Consumer impact
		Lower estimate	Upper estimate			
F1 Enhanced Biosecurity (40%)	90%	€1146	€1720			
T1 On-farm Testing						
S1 Best Practice Hygiene (30%)						
S2 Chemical Decontamination (80%)						
T2 Post slaughter Testing						

111-167 milioni di euro

Table 8.9 Summary costs of *Campylobacter* control strategy CS2c

Control name and (efficacy %)	Reduction in EU incidence (%)	Annual cost per DALY avoided		Availability	Industry impact	Consumer impact
		Lower estimate	Upper estimate			
F1 Enhanced Biosecurity (55%)	92%	€2739	€4108			
F4 Vaccination (90%) OR F5 Bacteriocins (90%)						
T1 On-farm Testing						
S1 Best Practice Hygiene (25%)						
T2 Post slaughter Testing						

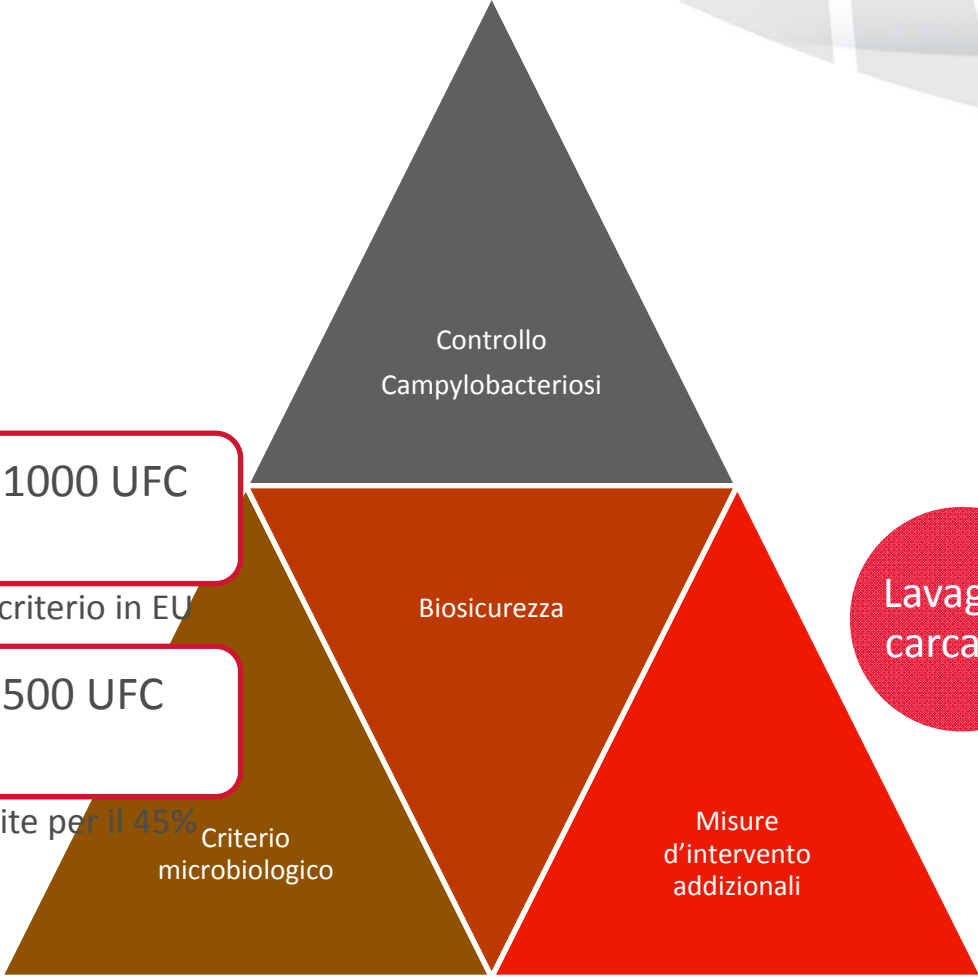
273-410 milioni di euro







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**Criterio microbiologico 1000 UFC**  
riduzione rischio 50%

- 15% di produzione fuori dal criterio in EU

**Criterio microbiologico 500 UFC**  
riduzione rischio 90%

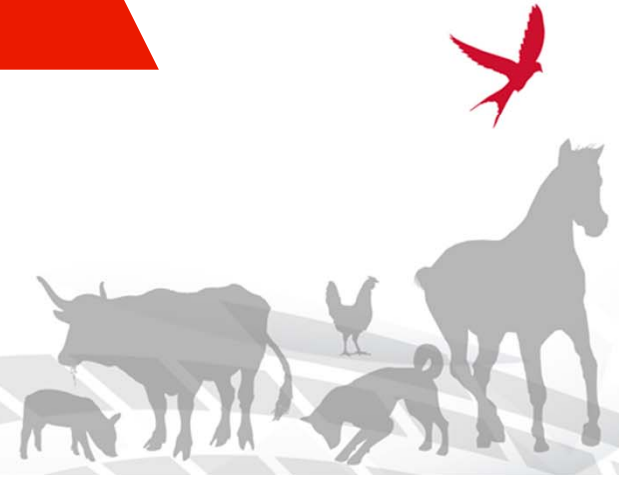
- una produzione fuori dai limite per il 45%

Criterio microbiologico

**Lavaggio carcasse**

Raffreddamento rapido superficiale

Misure d'intervento aggiuntive





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# Questionario DG sanco



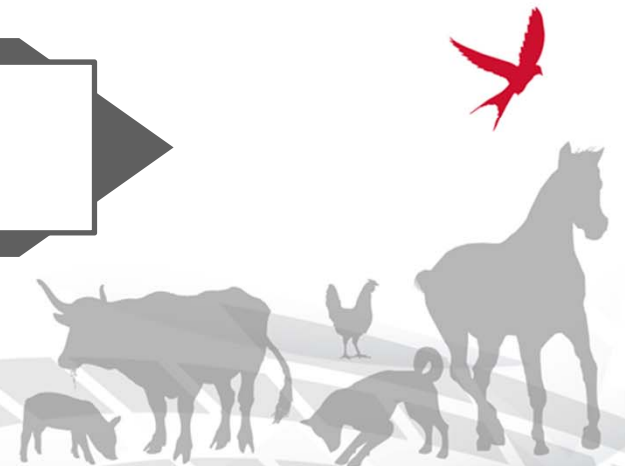
a) Questionario agli addetti ai lavori

Stati membri

26 partecipanti

Stakeholders

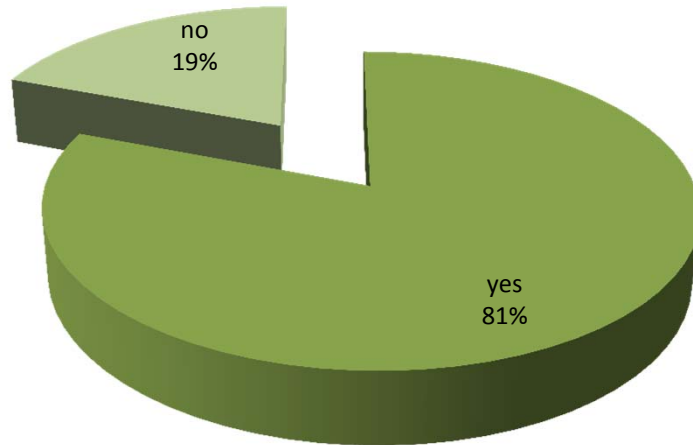
17 partecipanti



# Questionario

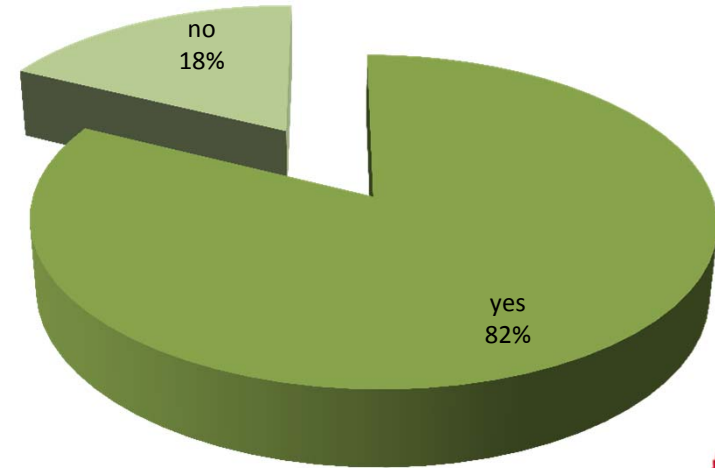


**E' la campylobacteriosi un problema nella tua nazione?**



Stati membri

**E' la campylobacteriosi un problema nella tua nazione?**



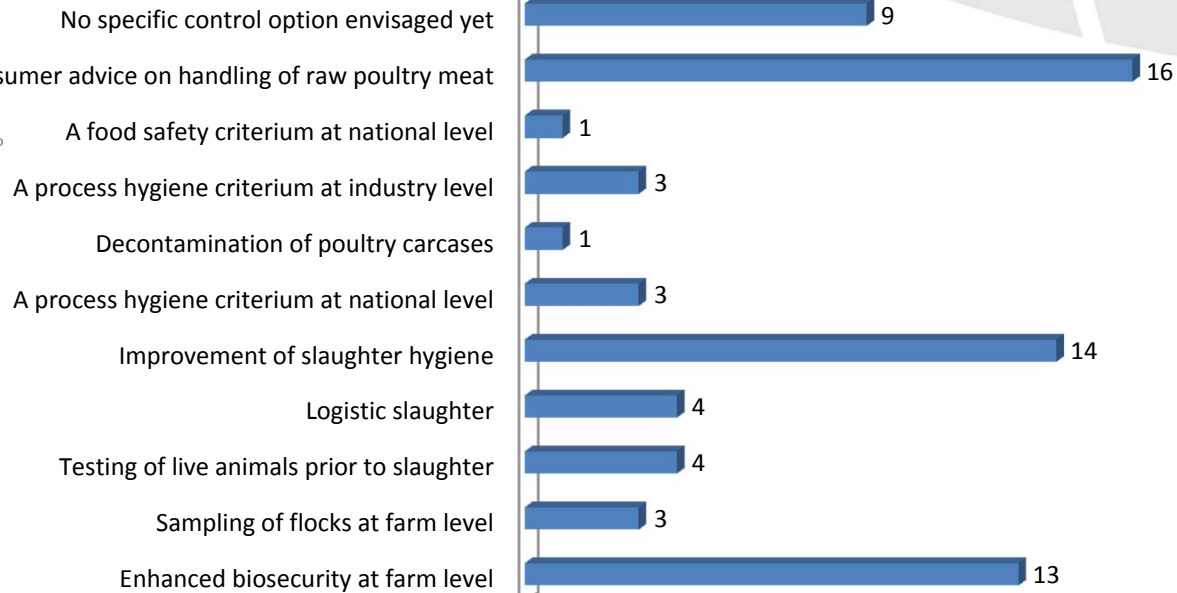
Stakeholders



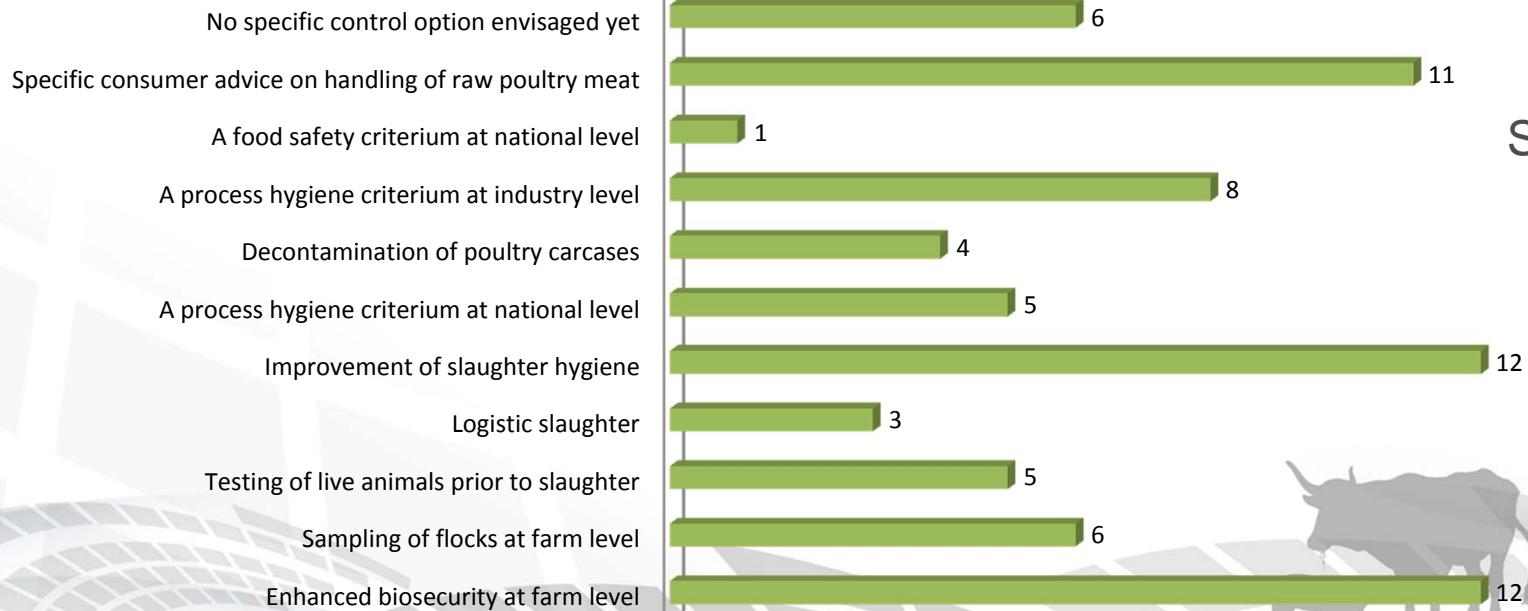
# Avete già immaginato delle opzioni di controllo



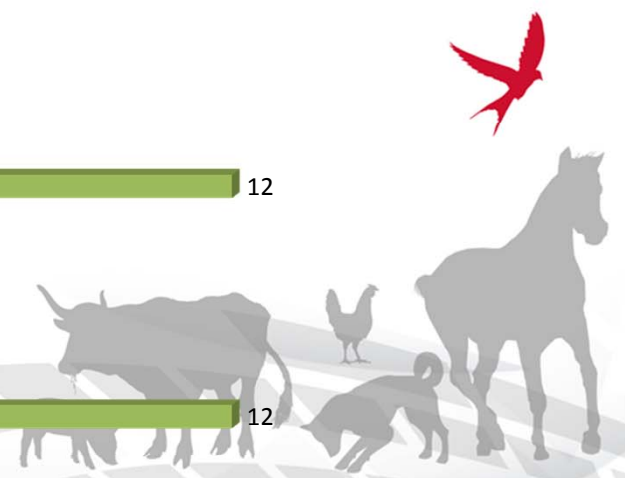
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Stati membri



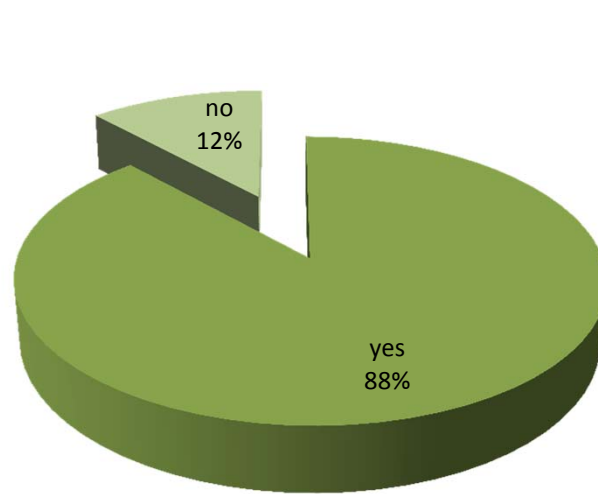
Stakeholders



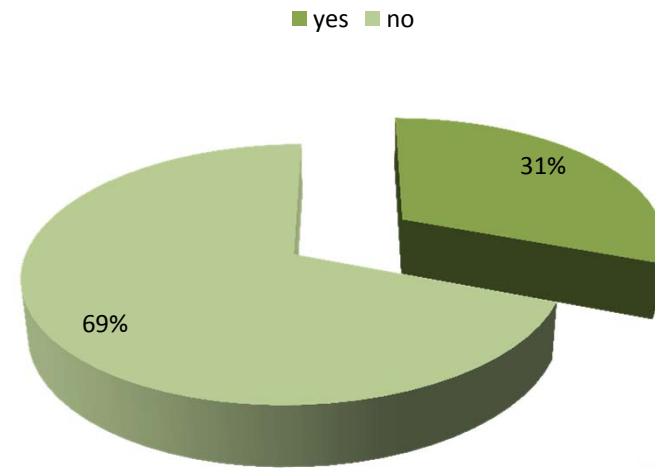


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## Sosterrete un criterio di igiene di processo armonizzato a livello europeo



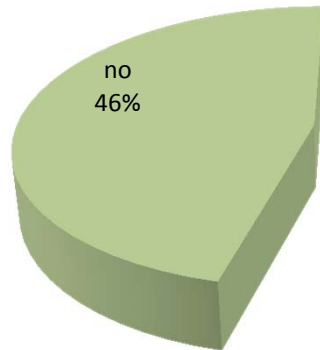
Stati membri



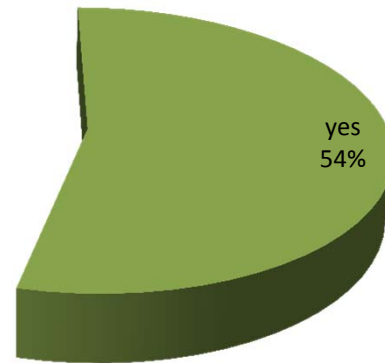
Stakeholders



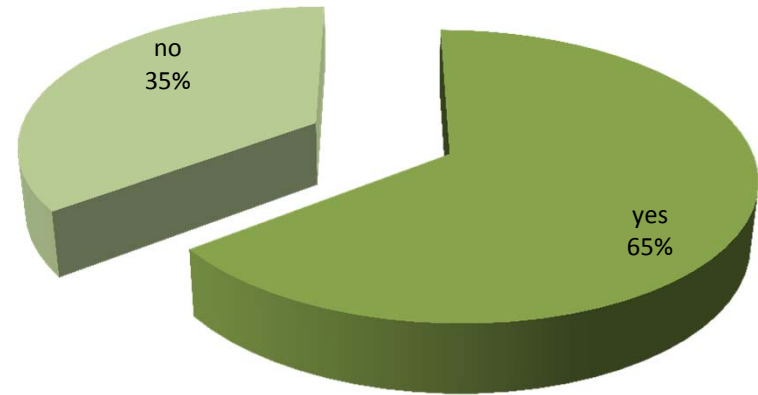
## Procedereste con misure nazionali anche se EU non procede con un approccio armonizzato?



Stati membri



Stakeholders





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## Quale è la soglia per un per un criterio di igiene di processo con Campylobacter?

### Stati membri

<500 cfu/g neckskin	5	19 %
<1.000 cfu/g neckskin	10	38 %
<5.000 cfu/g neckskin	4	15 %
<10.000 cfu/g neckskin	7	27 %

### Stakeholders

<500 cfu/g neckskin	1	6 %
<1.000 cfu/g neckskin	7	41 %
<5.000 cfu/g neckskin	2	12 %
<10.000 cfu/g neckskin	7	41 %





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## Considerereste un altro un criterio di igiene di processo?

### Stati membri

<b>Process hygiene criterion on E. coli/Enterobacteriaceae</b>	<b>11</b>	<b>42 %</b>
<b>Other sampling matrices</b>	<b>5</b>	<b>19 %</b>
<b>Other</b>	<b>10</b>	<b>38 %</b>

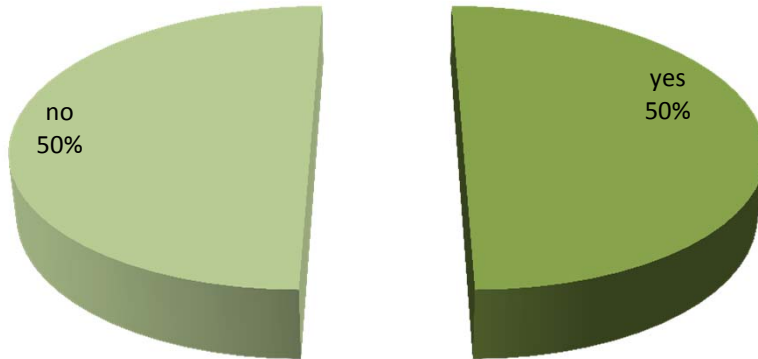
### Stakeholders

<b>Process hygiene criterion on E. coli/Enterobacteriaceae</b>	<b>4</b>	<b>24 %</b>
<b>Other sampling matrices</b>	<b>3</b>	<b>18 %</b>
<b>Other</b>	<b>10</b>	<b>59 %</b>

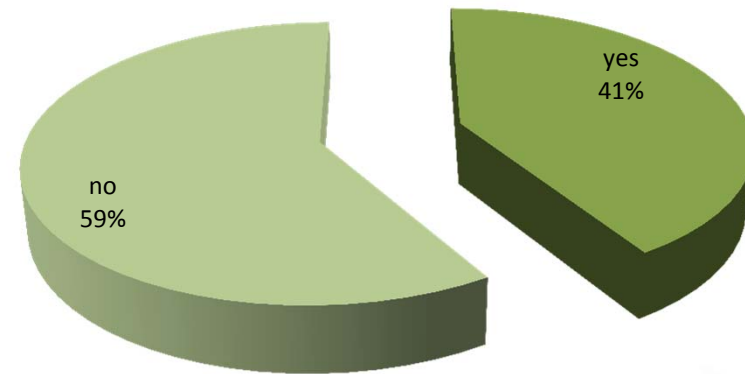




## Pensate che la decontaminazione chimica possa essere utile per Campylobacter?




Stati membri



Stakeholders



# EFSA- Molecular typing project



**EFSA's Project on the technical support for the collection of data on molecular testing in food, feed and animal isolates of food-borne pathogens.**

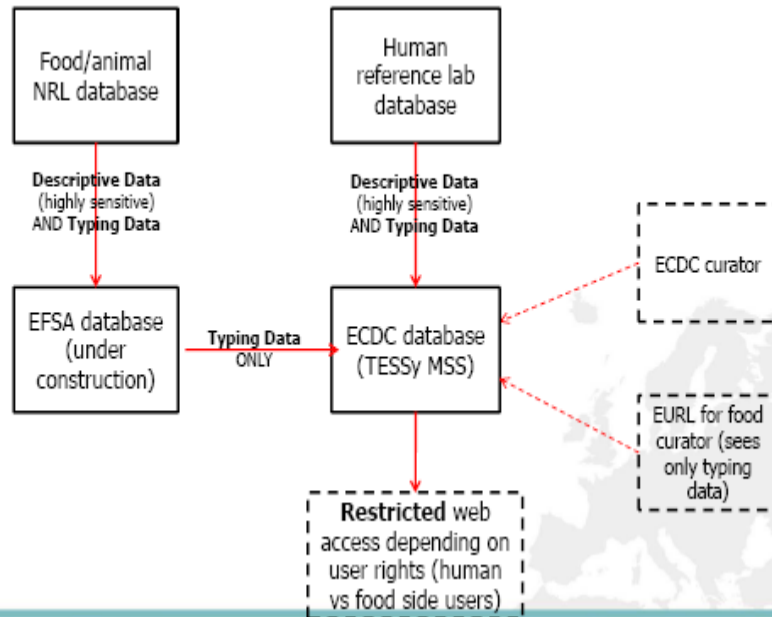
**a)** Lo scopo è quello di incoraggiare la raccolta di dati di tipizzazione molecolare per consentire l'integrazione di dati su isolati da casi umani, da cibo e dagli animali .





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# EFSA-ECDC database



La raccolta dei dati per la copertura inizialmente comprenderà Salmonella , Listeria e VTEC con PFGE e MLVA ( S. Typhimurium ) con metodi PFGE e MLVA Altri patogeni e7o altre metodologie verranno prese in considerazione successivamente

Campylobacter è in discussione





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# 3

## Antibiotico resistenza Campy



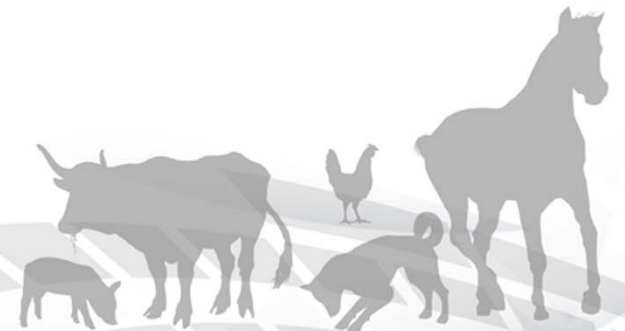
### a) EURL antibiotic resistance

Monitoraggio 652/2013 – *C. jejuni* e *C. coli*

Anni 2014, 2016, 2018, 2020 per ovaiole, broilers, tacchini

Anni 2015, 2017, 2019 maiali e bovini e le loro rispettive carni

- Da testare 170 isolati per ogni combinazione di specie e campione





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# 4

## Esperienze UK Campylobacter

- a) EU baseline survey in 2008
- b) UK prevalence
- c) Broiler batches (caecal contents) – 75%
- d) Broiler carcasses (neck skin) – 86%
- e) Above EU average (71% and 77%)
- f) Samples over 1,000 units = 27%



Hanno applicato un piano di risk management – Azienda che nel macello

Dopo 3 anni di monitoraggio si aspettavano una riduzione dei campioni critici al 10%

### No progress made in reducing Campylobacter in chicken, admits FSA



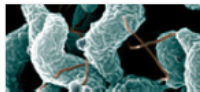
By Joe Whitworth+  
04-Sep-2013

Post a comment

Related tags: Antimicrobial treatment, Campylobacter, FSA, Pathogen, Chicken, Foodborne, Illness

Related topics: Food Alerts, Testing

Reducing Campylobacter remains vital for the UK Food Standards Agency (FSA) despite no evidence of change since 2008.



### Campylobacter results 'disappointing', with no progress on targets



By Rod Addy+  
02-Sep-2013

Post a comment

**A Food Standards Agency (FSA) report has branded the failure to meet targets for tackling campylobacter "disappointing", claiming fatalistic industry views are hampering progress and must change.**

According to a report issued last Friday (August 30) by Steve Wearne, FSA food safety director, the campylobacter Joint Working Group (JWG) had made no progress on tackling the pathogen, as originally revealed by FoodManufacture.co.uk in July.



The JWG, comprising government and industry representatives, aimed to cut the amount of UK-produced raw chicken with the highest campylobacter

Settembre 2013 nuova strategia governo/produttori





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We want to protect you and your family from food poisoning in your own home, particularly when handling chicken. So for Food Safety Week this year we're saying: 'Don't wash raw chicken'. This is because of a food bug called campylobacter, the most common cause of food poisoning in the UK. It can be fatal.

<http://www.food.gov.uk/news-updates/campaigns/campylobacter/fsw-2014>

**£5.1 million**  
committed to  
campylobacter  
research by  
the FSA



## Your quick guide to campylobacter



Campylobacter (pronounced *cam-pie-lo-bac-tor*) is a spiral-shaped bacterium that is the most common cause of food poisoning in the UK. You can't see it, smell it or even taste it on food, but if you get food poisoning from campylobacter, you won't forget it. The most common cause of campylobacter poisoning is chicken and other poultry that's not cooked or handled properly.

### Campylobacter facts

More than  
**280,000**

cases of campylobacter poisoning in the UK every year.\*



The amount of chicken sold in the UK that was contaminated with campylobacter, between May 2007 and Sept 2008.\*\*

Up to **4 in 5** cases of campylobacter poisoning in the UK and other EU countries come from contaminated poultry\*\*\*

Campylobacter is estimated to cause more than 100 deaths a year and costs the UK economy

**c.£900 million**

### How is campylobacter spread?

In the kitchen, two of the most common ways are through cross-contamination and undercooked chicken. Cross-contamination is when harmful bacteria spreads from one surface to another. Washing raw chicken can spread bacteria onto hands, work surfaces, clothing and kitchen equipment – so don't do it!



#### What are the symptoms?

People with campylobacter poisoning can get severe diarrhoea, abdominal pain, fever and sometimes vomiting. It can sometimes take up to 10 days to get better. It can also lead to irritable bowel syndrome, reactive arthritis and Guillain-Barre syndrome (this is a serious condition of the nervous system). At its worst, it can kill.

#### Who can get it?

Anyone who is exposed to the bacteria can get it from it, but young children, under the age of five and those over 60 are at a greater risk.

#### What treatment is there?

Most people recover without treatment within two to five days. A re-hydration solution to combat dehydration (losing water, sugars and minerals through diarrhoea or vomiting) can help. Severe infections are treated with antibiotics.

### How can you avoid it?

#### Don't wash raw chicken

You don't need to wash raw chicken before cooking it. Washing chicken can spread germs around the kitchen by splashing them onto other surfaces and utensils.



#### Practise good kitchen hygiene

Thoroughly wash and clean all utensils, chopping boards and surfaces used to prepare raw chicken. Do remember to also wash your hands with soap and warm water after handling raw chicken to prevent cross-contamination.



#### Store raw chicken correctly

Cover raw chicken and store at the bottom of the fridge so juices cannot drip on to other foods and contaminate them.



#### Cook chicken thoroughly

Make sure you cook your chicken thoroughly to kill any bacteria present, including campylobacter. Chicken must be steaming hot all the way through before serving, with no pink meat. Juices must run clear.



For more information, visit: [food.gov.uk/chicken](http://food.gov.uk/chicken)

Let's keep connected at [food.gov.uk/facebook](https://www.facebook.com/foodgov)

Join our conversation @foodgov using #PlayingChicken

Watch us on [food.gov.uk/youtube](https://www.youtube.com/foodgov)

Sources: \*\*FSA estimate. \*\*\*EU survey of chicken on sale in the UK (2007-2008).  
\*\*\*European Food Safety Authority scientific opinion (adopted 2008) <http://www.efsa.europa.eu/en/infocollabor/1477.htm>



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# Conclusioni

- a) Il principale impatto delle misure di controllo per *Campylobacter* è quello dell'imposizione di costi aggiuntivi per l'industria con successive variazioni nel mercato UE e in quello dei paesi terzi
- b) D' altra parte queste potrebbero essere considerate spese potenzialmente positive in quanto ridurrebbero una malattia aumentando la fiducia dei consumatori sulle carni fresche di pollame
- c) Sono necessarie ulteriori ricerche sull'epidemiologia di *Campylobacter* , per capire il suo ciclo vitale in aziende zootecniche e le vie di infezione per l'uomo.
- d) Inoltre ulteriori studi sulla sieroprevalenza nell'uomo come anche la costruzione di modelli per l'attribuzione della fonte di *Campylobacter* sono campi di ricerca da scoprire ulteriormente.







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Francesca Marotta  
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