Campylobacter contamination levels in poultry meat in the EU and recommended reduction measures

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International Conference on PREVENTION AND CONTROL OF *CAMPYLO-BACTER* IN THE POULTRY PRODUCTION SYSTEM, Milan, 31 August 2015

What are the *Campylobacter* contamination levels in broilers and broiler meat ?

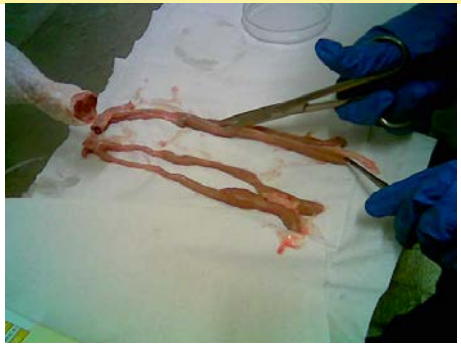
CAMPYLOBACTER IN BROILERS / BROILER MEAT

EU harmonised BLS: methods

- 10,132 broiler batches were sampled from 561 slaughterhouses in 2008

From every batch one pooled sample from the caecal contents of 10 carcasses was examined for *Campylobacter*

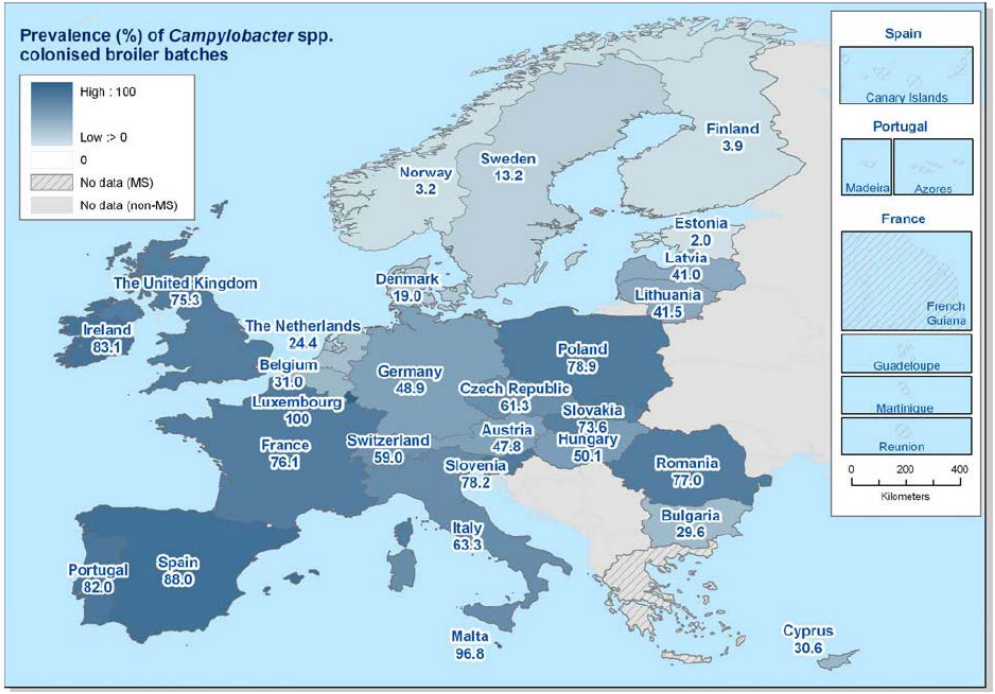
From the same batch, one carcass was collected after chilling from which the neck skin together with the breast skin was examined for the presence and counts of *Campylobacter*



CAMPYLOBACTER IN BROILERS / BROILER MEAT

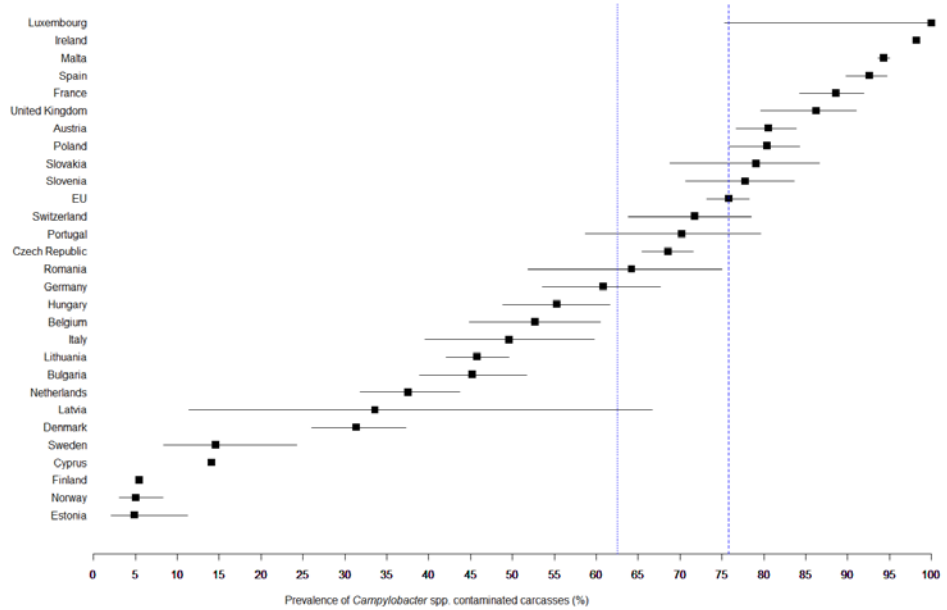
EU harmonised BLS: prevalence

- At EU level the prevalence of *Campylobacter*-contaminated **broiler batches** was **71.2 %**
- The MS-specific prevalence varied from 2-100%



CAMPYLOBACTER IN BROILERS / BROILER MEAT

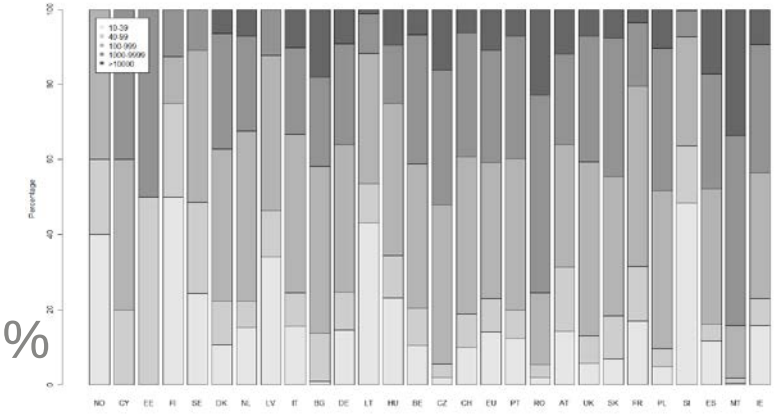
- At EU level the prevalence of *Campylobacter*-contaminated **broiler carcasses** was **75.8 %**
- The MS-specific prevalence varied from 4.9-100%
- By species:
  - 2/3 *C. jejuni*
  - 1/3 *C. coli*



CAMPYLOBACTER IN BROILERS / BROILER MEAT

EU harmonised BLS: counts

- Distribution of *Campylobacter* counts on broiler carcasses:
  - 0-10 cfu/g: 47.0%
  - 10-99 cfu/g: 12.2%
  - 100-999 cfu/g: 19.3%
  - 1,000-10,000 cfu/g: 15.8%
  - >10,000 cfu/g: 5.8%



- Counts varied widely between MSs
- Tendency for high counts when high prevalence

CAMPYLOBACTER IN BROILERS / BROILER MEAT

Monitoring data, EU, 2013

- Comparability of data
  - Results from different countries are not directly comparable owing to between-country variation in the sampling and testing methods used
  - The proportion of positive samples observed could have been influenced by the sampling season

CAMPYLOBACTER IN BROILERS / BROILER MEAT

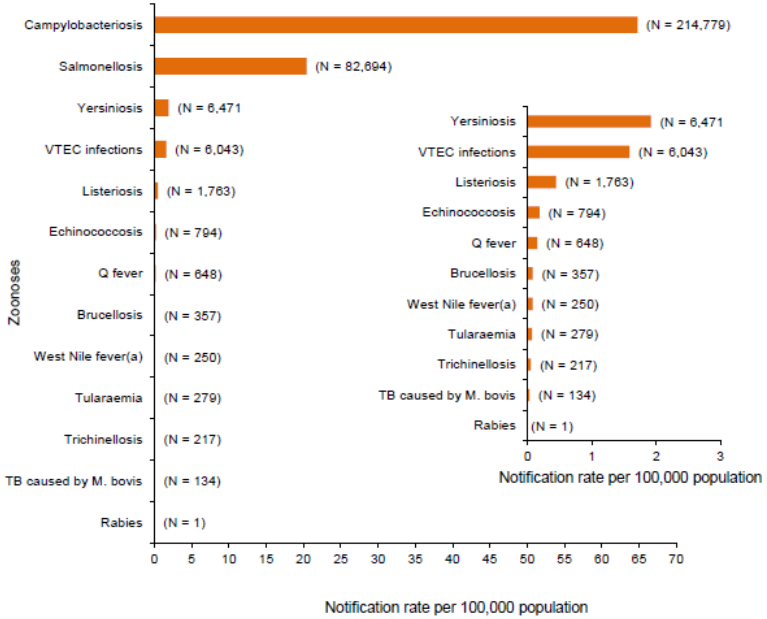
- **Around 20% of the broiler samples were** *Campylobacter*-positive (11,475 units tested); or
  - 30.4% of animals; 15.1% of flocks; 29.6% of slaughter batches
- **Just above 30% of the fresh broiler meat samples were** *Campylobacter*-positive (8,022 units tested; single or batch); or
  - 52.3 (49.9)% of batches (single samples) at slaughterhouse; 0 (12)% of batches (single samples) at processing; 9.8 (26.4)% of batches (single samples) at retail
- The prevalence varied greatly between MS

What is the risk posed by broiler meat to human campylobacteriosis ?

HUMAN CAMPYLOBACTERIOSIS

Human zoonoses cases and notification rates, EU, 2013

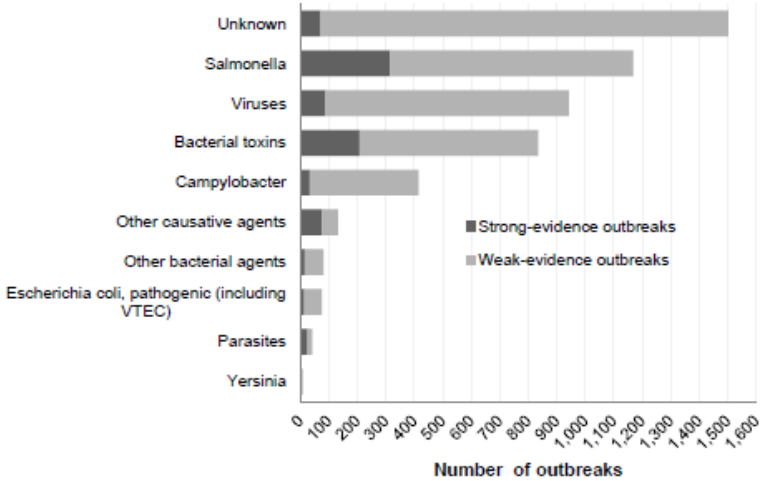
- Campylobacteriosis has been most commonly reported zoonosis since 2005
- In 2013: 64.8 cases per 100,000 population



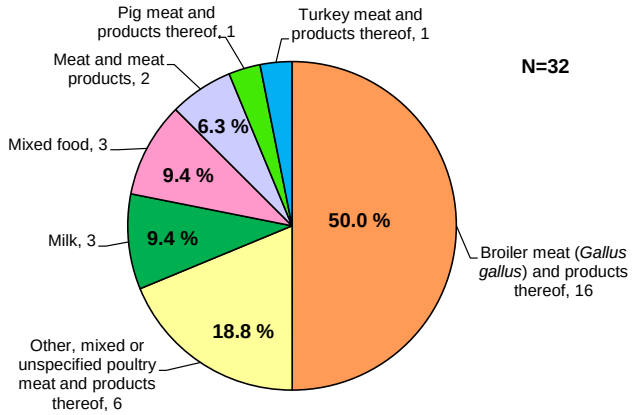
HUMAN CAMPYLOBACTERIOSIS

Foodborne outbreaks, EU, 2013

- 414 *Campylobacter* outbreaks reported (8% of total): 32 strong evidence

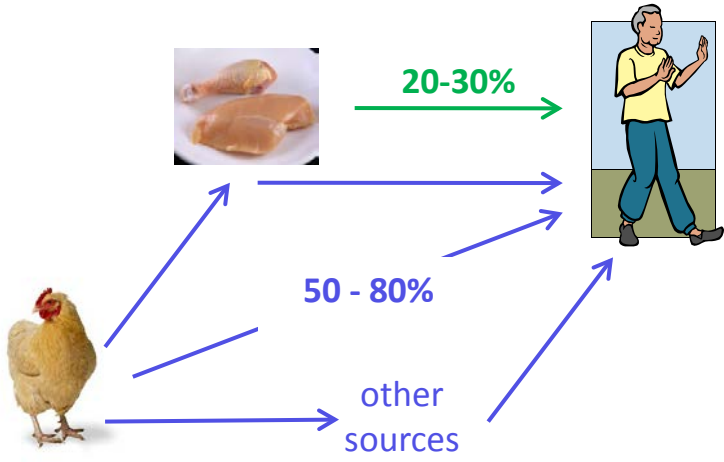


- Broiler meat associated with 50% of strong-evidence outbreaks



HUMAN CAMPYLOBACTERIOSIS AND BROILERS

- The BIOHAZ Panel estimated in 2011 ~ 9 million campylobacteriosis cases per year in the EU27
- Estimated disease burden is 0.35 million DALYs per year and total annual costs are 2.4 billion €
- Handling, preparation and consumption of broiler meat may account for 20-30% of campylobacteriosis cases
- 50-80% may be attributed to the chicken reservoir

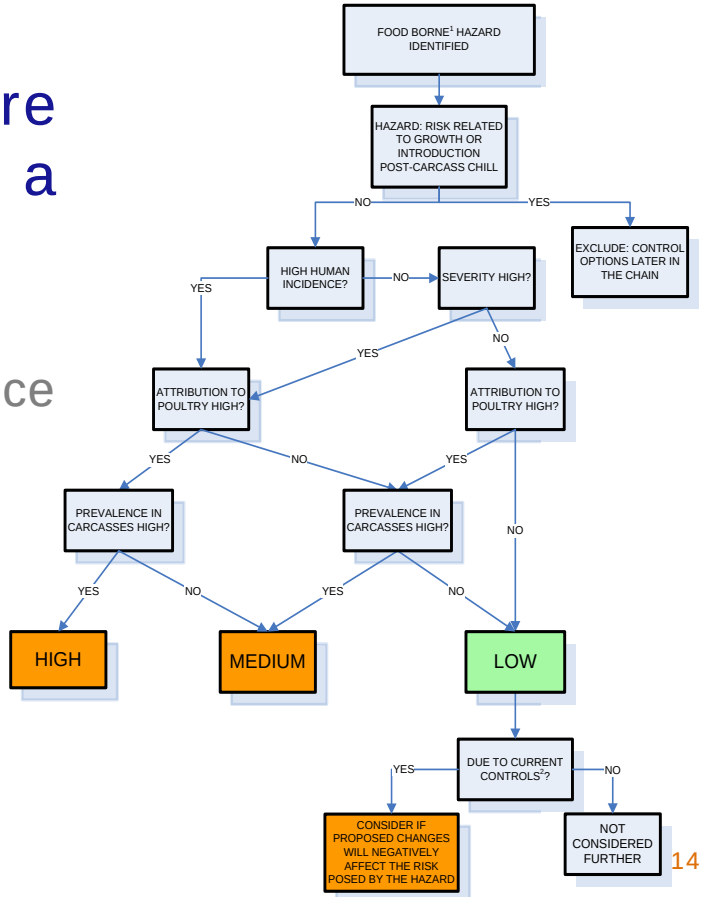


HUMAN CAMPYLOBACTERIOSIS AND BROILERS

- The public health benefits of controlling *Campylobacter* in primary broiler production are expected to be greater than control later in the chain as bacteria may also spread from farms to humans by other pathways than broiler meat
- Data for source attribution in EU are limited and there are indications that the epidemiology of human campylobacteriosis differs between regions => conclusions to be interpreted with care

MAIN RISKS FOR PH; POULTRY MEAT INSPECTION

- Hazards from scientific literature were ranked qualitatively using a **decision tree**
  - *Salmonella* spp.: HIGH relevance
  - *Campylobacter* spp.: HIGH relevance
  - *ESBL/AmpC (E. coli):* MEDIUM to HIGH relevance
  - *ESBL/AmpC (Salmonella):* LOW to MEDIUM relevance



What are control options and what is effect of targets and microbiological criteria ?

RISK FACTORS

EU harmonised BLS

- The risk for colonisation of broilers by *Campylobacter*
  - increases two-fold for every 10 days the birds get older
  - is higher for batches originating from thinned flocks
  - depends on the season (July-September)
- A *Campylobacter*-colonised broiler batch
  - was 30 times more likely to yield a contaminated carcass
  - yielded carcasses with higher *Campylobacter* counts
- The risk of *Campylobacter* contamination of carcasses
  - is higher when processed later during the day

CONTROL OPTIONS

Primary production

- Fly screens (indoor flocks) } ~ 60% PH risk reduction
- Restriction of slaughter age to a max 28 days (indoor flocks) ★ } < 50% PH risk reduction
- Discontinued thinning ★

Directly available intervention (technical point of view) ★

CONTROL OPTIONS

Post-slaughter

- Irradiation/cooking
- *Freezing for 2-3 weeks*
- *↓ conc in intestines at slaughter by > 3 log_{10} units*
- Freezing for 2-3 days
- Hot water decontamination
- Chemical carcass decontamination

100% PH risk reduction

90% PH risk reduction

50-90% PH risk reduction

TARGETS AND MICROBIOLOGICAL CRITERIA

Targets in primary production

- Achieving a target of **25%** or **5%** **between-flock prevalence** (BFP) in each MS is estimated to result in **50%** and **90%** PH risk reduction at EU level
  - Higher PH risk reduction if current BFP is higher
  - The time period to obtain reductions will differ between MSs
  - Targets are not realistic for flocks with outdoor access

TARGETS AND MICROBIOLOGICAL CRITERIA

Microbiological criteria

- A **PH risk reduction** **>50%** or **>90%** at the EU level could be achieved if all batches that are sold as fresh meat would comply with a MC with a critical limit of **1000** or **500** **cfu/gram** of neck and breast skin
- A total of **15%** and **45%** of all batches tested in the EU BS of 2008, would **not comply** with these criteria
- The impact could be very different between MSs

Biological hazards

POULTRY MEAT INSPECTION

Recommended inspection methods fit for new hazards currently not covered

- Food Chain Information
  - could be used for risk categorisation of flocks/batches
  - → requires additional food safety information, e.g. indicators for the main PH hazards

POULTRY MEAT INSPECTION

- Ante-mortem inspection
  - detects fecally contaminated birds and assessment of general health status of the flock
  - → no adaptations required
- Post-mortem inspection
  - replaced by establishment of **targets** for the main hazards on the carcass and by verification of the FBO's own hygiene management through the use of PHC
  - elimination of abnormalities on aesthetic/meat quality grounds can be ensured through meat quality assurance systems

More information

MORE INFORMATION

Cited references

- Baseline survey (2010): www.efsa.europa.eu/it/efsajournal/pub/1503; www.efsa.europa.eu/en/efsajournal/pub/1522
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- Risk posed by broiler meat (2010): www.efsa.europa.eu/en/efsajournal/pub/1437.htm
- *Campylobacter* control options (2011): www.efsa.europa.eu/en/efsajournal/pub/2105.htm
- Poultry meat inspection (2012): www.efsa.europa.eu/de/efsajournal/pub/2741.htm

MORE INFORMATION

Acknowledgements

- WG experts and contractor of EFSA WG on *Campylobacter* in broiler meat production: control options and performance objectives and/or targets
- WG experts of EFSA WG on poultry meat inspection and of EFSA WG on baseline survey
- The BIOHAZ Panel members
- The EFSA staff

MORE INFORMATION

Useful information

- Questions on this presentation:

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- Questions on EFSA activities:
  www.efsa.europa.eu/askefsa