

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

INFORMATION PAPER

***Campylobacter* Strategy Workshop 12-14 October 2009**

At the December 2009 ACMSF meeting the Food Standards Agency updated the Committee on the joint FSA/Defra/BBSRC *Campylobacter* workshop that took place in October 2009. The FSA agreed to provide the Committee with a report of the workshop.

Please find attached a note of the workshop for your information.

Secretariat
March 2010

***Campylobacter* Strategy Workshop 12-14 October 2009**

The aim of the joint BBSRC, FSA and Defra *Campylobacter* Strategy Workshop (held on 12-14 October 2009 in Staverton Park Hotel Northamptonshire) was to explore and prioritise research activities to input into practical outcomes in the control of *Campylobacter* infection. This was achieved by bringing together basic, strategic and applied researchers with representatives from each part of the production to consumer chain.

The programme is included in annex 1, and in summary:

Day one of the workshop consisted of background and scene setting from scientists demonstrating that the major source of campylobacteriosis in the UK is from the chicken as well as from research funders and regulators, setting out the policy and regulatory framework in which we must address the issues and how safe food fits into the important UK government policy drivers around food security (e.g. [UK Cross-Government Food Research and Innovation Strategy](#)). The background from wider consumers, retailers and production industry was represented with talks from the British Poultry Council, Aviagen, National Farmers Union, 2 Sisters Food Group, Campden BRI and Sainsburys.

The scientific discussions of the workshop were split into four sessions entitled: Understanding the organism; *Campylobacter* in poultry; The farm and slaughter house environment; and *Campylobacter* in humans. Each of these sessions consisted of 3-4 talks from key researchers in the field summarising the latest data, current understanding and gaps in the knowledge base. Each session was followed by extensive discussion on the key research challenges underpinning the main policy and industry drivers and which of these challenges should be a priority.

Day three of the workshop concentrated on reviewing the key issues and priorities raised in the discussion sessions following the science presentations, in order to ensure there was a clear understanding of the different issues, and that all of them had been captured. The final agreed list is in annex 2. Following this, a prioritisation exercise was undertaken, with industrial and academic delegates separately considering these research areas and selecting those that would have the greatest impact in the short and long term, and also those that would be most cost effective. After the meeting, these targets were brought together as a single set of research priorities reflecting the principle areas for immediate and long term research studies and programmes in the near and longer term. The key highlights of this prioritisation are below, but more thorough analysis will be carried out by funders for inclusion in future planning.

Priorities for *Campylobacter* research identified at the October 2009 workshop

A number of key areas were identified where research could have the greatest impact on the overall targets. Whilst the timescale over which these would have an impact are variable, it was agreed that all need to be addressed in the near future.

An increased understanding of what happens ‘in real life’ and what interventions will really make a difference:

1. High quality baseline surveys so as to understand the efficacy of interventions when these are introduced
2. Greater knowledge of what interventions actually work, including trialling of large-scale interventions
3. Studies to compare the different real-life on-farm and in-factory practices that appear to have different *Campylobacter* occurrence rates
4. Studies to develop a better understanding of the effect of feed regimes, feed additives, organic acids etc on the occurrence of *Campylobacter* in flocks
5. Studies around potential interventions in transportation/slaughter house/factory practices
6. Studies on human behaviour:
 - On farm and in production processes
 - Domestic and commercial preparation and cooking practices

Development of an understanding of the whole system across the bacterium to the bird to the human:

7. Predictive modelling of the system
8. Improved understanding of how the bacterium survives in the environment
9. Increasing understanding of colonisation in the chicken, including of immune response
10. Increased understanding of the total microbiota of the chicken gut, including the effect of welfare, feed, other factors on the microbiota, and *Campylobacter* in particular

A focus on significant routes to reducing the levels of *Campylobacter* in chickens:

11. Development of appropriate strains of chicken that are genetically resistant to *Campylobacter*
12. Development of a vaccine(s)
13. Development of bacteriophage, bacteriocins and other new anti-microbials

The need for some particular tools:

14. The development of a rapid, on-farm test for *Campylobacter*
15. A strain bank to assist in understanding the genetic diversity of the bacterium.

Next steps

The desired output from the meeting was the production of a strategy document outlining the priorities for research to develop appropriate interventions that will lead to a reduction in human infection with *Campylobacter*. This strategy should be seen as directed actions from the industrial and academic community to the funding bodies to support a programme of research that addresses a major UK Government policy objective.

Following analysis of the identified areas for *Campylobacter* research - from the pathogen through the poultry chain (and other sources) to humans - relevant funding bodies are working together to develop and establish a UK joint funders research strategy for *Campylobacter*.

Annex 1: Programme

12th October 2009: Current needs from the stakeholder/policy maker

Chair: Patrick Wall (University College Dublin)

11:30 onwards - Registration

12:30 Lunch

13:30 **Welcome and introduction to the meeting.**
Celia Caulcott (BBSRC)
Andrew Wadge (FSA)

13:45 **Molecular epidemiological evidence for chickens as a major source of human campylobacteriosis in the UK**
Martin Maiden (University of Oxford)

14:00 **Campylobacter from the policy/regulatory perspective**
Liz Redmond (FSA)
Alick Simmons (Defra)
Adam Staines (BBSRC/GO Science)

15:15 Tea Break

15:45 **Campylobacter from the industry/retailer/consumer perspective**
Peter Bradnock (BPC)
Bill Stanley (Aviagen)
Robert Newbury (NFU)
Martin O'Reilly (2 Sisters Food Group)
Roy Betts (Campden BRI)
Alec Kyriakides (Sainsburys)

17:45 **Summing up of the day**
Patrick Wall (University College Dublin)

19:00 Drinks in the bar

Dinner **Consumer reaction to food scares**
Andrew Fearn (University of Kent)

13th October 2009: Scientific Discussion Sessions

Chair: Patrick Wall (University College Dublin)

09:00 **Introduction to the day**
Patrick Wall (University College Dublin)

09:15 **Session 1: Understanding the Organism**
Andrew Grant
Arnoud van Vliet (Institute of Food Research)
Dave Kelly (University of Sheffield)
Charles Penn (University of Birmingham)

10:45 Tea Break

11:30 **Session 2: Campylobacter in Poultry**
Dave Burt (Roslin Institute)
Pete Kaiser (Institute of Animal Health)
Laura Powell (Veterinary Laboratories Agency)
Tom Humphrey (University of Bristol)

13:00 Lunch

14:15 **Session 3: The Farm and**

Slaughterhouse Environment
David Jones (University of Bangor)
Diane Newell
Janet Corry (University of Bristol)

15:45 Tea break

16:15 **Session 4: Campylobacter in Humans**
Patrick Wall (University College Dublin)
Sarah O'Brien (University of Manchester)
Louise Matthews (University of Glasgow)
Madeleine Smith (University of Birmingham)

17:45 **Summing up of the day**
Patrick Wall (University College Dublin)

19:00 Drinks in the bar

Dinner **Approaches taken to reduce human Campylobacter infections in New Zealand**
Judi Lea (NZFSA)

14th October 2009: Taking the strategy forward

Chair: Dr Celia Caulcott (BBSRC)

09:00 **Introduction to the day**
Celia Caulcott (BBSRC)

09:30 **Agreeing main research priorities given policy/industry/consumer needs**

10:30 Tea break

11:00 **Best approaches to achieve a reduction in Campylobacter and the resources required:**

- In the long term
- In the short term

13:00 Lunch and depart

14:00 **Officials meeting**

Annex 2: Initial *Campylobacter* Research Priorities Identified by Workshop Delegates
(The list is in no particular order of priority)

1. Genetic diversity and phenotypic variation, a strain bank?
2. Need for *Campylobacter* studies in host organisms
 - a) Balance between strains and types
3. Microbiota of the chicken gut, effect of welfare, feed, other factors e.g. gut triggers
4. How does chicken's diet, age and growth rate affect the emergence of *Campy*
5. Understanding colonisation of the chicken
6. Seasonality?
7. Understanding all aspects of the age of chickens on *Campylobacter* status
8. Developing genetically resistant strains (of chicken)
9. Immune response of chickens
10. Welfare and stress- thinning, lighting, stocking density
11. Vaccines
12. Bacteriophage and bacteriocins and other new anti-microbials
13. Feed, feed regime, pre/probiotics, organic acids etc
14. Trialling of interventions: large scale, on farm, which ones?
15. Compare real life systems
16. On farm management and biosecurity and production systems source variation?
17. Transportation/ slaughter house studies
18. In/on farm transmission factors and within flock (flock transmission dynamics)
19. Need for efficacy data what interventions actually work
20. Human behaviour in production process and on farm
 - a) Human transmission, e.g. packaging
21. Practice in the kitchen, preparation and cooking practices
22. Consumer/Retailer attitude to interventions
23. Complexity of the human interaction with the organism
 - a) and complexities of human immunity
24. Need for a rapid test for *Campylobacter*
25. Model farms or access to other large scale facilities
26. Small animal model for human disease
27. The facts of other interventions in Europe
28. Survival in the environment(s)

29. Base line surveys linked to efficiency of intervention
30. Modelling the whole chain, bird to human
31. Importance of non chicken sources