

Annex 1

Specific, applied research requirements identified by FSA/Defra

Introduction

As outlined earlier, *Campylobacter* is the most common cause of food poisoning in the UK. A survey¹⁰ carried out by the Food Standards Agency (FSA) of *Campylobacter* in chicken on retail sale in the UK between May 2007 and September 2008, reported that *Campylobacter* was present in 65% of the fresh chicken samples tested. An EU baseline survey carried out in 2008 and published by EFSA¹¹ in March 2010 showed the UK estimated prevalence for *Campylobacter* in broiler batches (caecal contents) was 75.3% and in broiler carcasses (skin samples) 86.3%. These results were above the weighted EU mean prevalence's of 71.2% and 77.0% respectively. There was a wide range of *Campylobacter* prevalence across Members States varying from 4.9% to 100.0% in broiler carcasses and from 2.0% to 100.0% in broiler batches.

The findings from these surveys show that there are *Campylobacter* related challenges in our food-safety system. One of the main priorities of the FSA is to reduce food-borne diseases in the UK. This is reflected in the FSA's Science and Evidence Strategy 2010-15¹² and Strategic Plan 2010-2015¹³ which states that food-borne disease will be reduced using a targeted approach, tackling *Campylobacter* in chicken as a priority. In order to achieve a substantial reduction in *Campylobacter*, FSA is implementing a *Campylobacter* Risk Management Programme. The Programme encompasses a range of projects targeted at different points across the food chain, from farm to fork. To measure progress on the effectiveness of the Programme a new target for the reduction in levels of *Campylobacter* in raw chicken at retail will be set and published by December 2010, to be achieved by April 2015. The target will be set and achieved through stakeholder engagement and partnership working.

In the short-term, there are a number of current biosecurity measures and interventions that are or could be in place in the UK poultry industry that need to be evaluated for their cost effectiveness in reducing *Campylobacter* levels. Complementary data and lessons learnt from EU and International projects also need to be collated and considered. In the longer-term, it is likely that new interventions will emerge as more underpinning research on risk factors is undertaken.

Campylobacter on farm.

Strict on-farm biosecurity is often promoted as a method by which *Campylobacter* may be excluded from houses and *Campylobacter*-free flocks maintained. In addition to general biosecurity such as boot dips, hand washing and clean clothing there are specific interventions currently available that are reported to contribute to the production of poultry that have not been colonised with *Campylobacter* such as hygiene barriers, water treatment and fly screens. Although there is information from

¹⁰ www.food.gov.uk/news/newsarchive/2009/oct/chicksurvey

¹¹ www.efsa.europa.eu/en/scdocs/scdoc/1503.htm

¹² www.food.gov.uk/multimedia/pdfs/publication/sciencestrategy0210.pdf

¹³ www.food.gov.uk/multimedia/pdfs/strategy20102015.pdf

other countries demonstrating the success of these interventions there is little information in the UK to understand if and how these interventions can be successfully applied in a commercial setting to control *Campylobacter*.

A study is required to increase the understanding of the cost and efficacy of these additional interventions when applied in combination with the consistent application of strict biosecurity. Studies which focus on the effectiveness of a single intervention, or those which look at multiple interventions will be considered. The proposal should include an estimate of costs for each intervention to be studied and the project output should include details of costs gathered during the study and calculations of the cost effectiveness of successful interventions as well as any impact on the environment if appropriate. Data generated must be of sufficient quality to enhance current risk assessment models. Recent typing studies have produced promising results that may inform more targeted interventions in the future; studies should therefore include provision for speciation and typing of isolates where appropriate.

Proposals are therefore invited to:

Requirement

Undertake studies to develop understanding of the efficacy and cost of interventions reported to assist in the control of *Campylobacter* colonisation on farm such as hygiene barriers, fly screens and water treatment.

This requirement is expected to be funded by Defra and FSA

Contact Mary Howell at FSA (details below) for advice and information on the FSA specific scientific issues or the policy background/objectives:

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The joint funders are also interested in receiving proposals for other interventions including novel approaches that are not covered in this specific requirement. Any such proposals should be submitted under the general on farm intervention research priority (see paragraph 13, topic b)

Controlling *Campylobacter* in the slaughterhouse

Campylobacter colonised broilers in general result in *Campylobacter* contaminated carcasses whereas non colonised broilers result in no or a low level of contaminated carcasses if colonised broilers have been processed previously by the slaughterhouse. The level of contamination in both situations has been reported in other countries to vary between slaughterhouses. This is thought to be due to the practices in the slaughterhouse both in terms of the type of equipment and processes used and their operation, cleaning and disinfection.

Previous studies in certain UK slaughterhouses have identified evisceration and plucking to be the processes that contribute most to the contamination of carcasses when processing a colonised slaughter batch. However the identification and quantification of these and other slaughterhouse factors as well as which processes contribute to the low but variable level of contamination that occurs on carcasses from a negative slaughter batch and how these vary between UK slaughterhouses has not been fully elucidated. Understanding these factors may be able to lead to the development of controls to reduce contamination particularly of carcasses produced from a positive slaughter batch. There are however possible interventions that could be used to control *Campylobacter* contamination in the slaughterhouse particularly during the processing of colonised batches such as UV light, electrolysed water, temperature, humidity and pH as well as steam and hot water. There is varying amounts of research data to support the efficacy of these interventions but data is particularly limited at the industrial scale.

The FSA have developed a slaughterhouse hygiene assessment tool that has assessed the range of practices in UK slaughterhouses and how these may affect control of *Campylobacter* contamination of carcasses based on current scientific evidence. The FSA is currently developing a basic risk assessment model to quantify the effect of production and processing stages as well as interventions on the level of campylobacter. Data from any further studies will contribute to the evidence base and both underpin the relative scoring in the broiler hygiene tool to assist processors in developing and monitoring their procedures as well as provide information to refine the risk assessment model. Proposals should include both a current estimate of the cost of any intervention as well as plans to gather costs during the study to enable the cost benefit of successful interventions to be calculated. Recent typing studies have produced promising results that may in the future lead to the design of more targeted interventions. Any study should therefore include provision for speciation and typing of isolates as appropriate to add to this knowledge base.

Requirement

Investigate in an industrial setting the impact and cost of interventions shown to be effective to control *Campylobacter* contamination of carcasses from colonised broiler batches in UK slaughterhouses.

Further Information

Contact Mary Howell (details below) for advice and information on the specific scientific issues or the policy background/objectives:

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The joint funders are also interested in receiving proposals for other interventions including novel approaches that are not covered in this specific requirement. Any such proposals should be submitted under the general slaughterhouse intervention research priority (see paragraph 13, topic b)

Controlling *Campylobacter* at retail.

Campylobacter does not grow in food stored below 10° C and so even poor chilling and storage regimes are unlikely to increase the risk from this organism. There are reports that the number of organisms on raw poultry may decline during chilled storage. Raw poultry meat can be packaged in different ways and, for example, when in a leak proof container a modified atmosphere can be introduced to control the growth of spoilage organisms and so extend the shelf life. There are reports that high oxygen will reduce *Campylobacter* numbers more effectively than high carbon dioxide but there is no comprehensive information on the acceptability and efficacy of different modified atmospheres or other existing interventions in a commercially relevant situation and the effect on *Campylobacter* numbers on retail packed whole birds and different types of portions.

Proposals are therefore invited to:

Requirement

Investigate the efficacy, practicality and cost effectiveness of existing interventions on *Campylobacter* numbers on retail packed raw poultry.

Further Information

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The joint funders are also interested in receiving proposals for other interventions including novel approaches that are not covered in this specific requirement. Any such proposals should be submitted under the general retail intervention research priority (see paragraph 13, topic b)