A REFRESHED STRATEGY TO REDUCE CAMPYLOBACTERIOSIS FROM POULTRY

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1. SUMMARY

1.1. Campylobacter remains the most common cause of food poisoning in the UK, killing around 100 people every year. Despite significant effort and investment by both industry and government, monitoring data shows that no progress has yet been made in reducing levels of campylobacter in chicken.

This paper reviews the current situation and proposes a refreshed strategic approach that aims to deliver a step change in the effective control of Campylobacter.

1.2. The Board is asked:

- To **discuss** and **agree** the refreshed strategy at Annexe 1, in particular:
  - Our statement of the distinct but complementary roles of government and industry;
  - The new focus proposed for FSA action; and
  - That when interventions are proven to be safe and effective in reducing contamination, the FSA should support their introduction, which may include work to increase the acceptability of the interventions to consumers.

- To **note** our intention to continue to engage industry partners in technical discussions through the Joint Working Group and work with the JWG and others to review its role and membership, and the need for other fora, in order to best deliver a step change in outcomes.

- To **note** our intention to continue bilateral discussions with business leaders in production, processing and retail sectors, with the intention of ensuring a focus on Campylobacter reduction as a business imperative and to **seek opportunities** to influence at FSA Board level through contact with the non-executive members of key business' boards.

2. INTRODUCTION

2.1. Campylobacter is the most common cause of human bacterial food poisoning in the UK. The most significant source of Campylobacter with respect to human health is poultry; 50-80% of cases of campylobacteriosis in the UK and other EU countries can be attributed to poultry and the majority of these are likely to be linked to raw poultry meat[1]. An FSA survey of chicken on sale in the UK (2007-8)[2] indicated that 65% of chicken at retail was contaminated with Campylobacter. A forthcoming FSA survey, expected to report in late 2014, will update this figure. An EU survey reported by EFSA of Campylobacter across the EU (2008) showed that the UK had the 6th highest prevalence of contaminated carcasses (86.3%)[3].

2.2. Since 2009 we have been working with industry to tackle Campylobacter in poultry through a Joint Working Group (JWG). The JWG agreed a target to reduce the levels of Campylobacter in UK-produced fresh chicken and developed an Action Plan to deliver the target. The target was considered achievable for the reduction of Campylobacter contamination of UK-produced chickens. The aim was to reduce the percentage of the most heavily contaminated chickens, with more than 1000 colony forming units per gram of chicken (cfu/g) at the end of the slaughter process, from 27% in 2008 to 19% by 2013, and to 10% by 2015.

2.3. We are now at the mid-point of that plan. Industry and government have invested significant money and effort in the search for a solution to Campylobacter in chicken. But despite these efforts there has not been any significant progress towards the reduction target (see Annexe 4) and more people are getting ill as a result of Campylobacter, not fewer. As a consequence, we need to reassess our approach.

3. STRATEGIC AIMS.

3.1. Our top food safety priority is to reduce foodborne disease using a targeted approach – tackling Campylobacter in chicken as a priority.

4. EVIDENCE[4]

4.1. Although the number of human cases of campylobacteriosis in the UK fell by 19% between 2000 and 2004, it has risen since 2005 and is now higher than in 2000 (see Annexe 3). In 2012 there were 72,571 confirmed cases in the UK but this is known to be an underestimate due to underreporting. Out of an estimated total of around one million cases of foodborne disease each year, Campylobacter is considered to be responsible for around

[1] Scientific Opinion on Quantification of the risk posed by broiler meat to human campylobacteriosis in the EU (adopted 9 December 2009) http://www.efsa.europa.eu/en/scdocs/scdoc/1437.htm
[2] http://food.gov.uk/science/research/surveillance/fsisbranch2009/fsis0409
[3] http://www.efsa.europa.eu/en/efsajournal/pub/1503.htm
[4] Relevant evidence from expert advice and research is discussed throughout this paper, with references to published sources.

460,000 cases, 22,000 hospitalisations and 110 deaths.[5]

4.2. Intervention studies in Iceland and New Zealand to reduce consumer exposure to highly contaminated chicken meat were accompanied by marked reductions in reported campylobacteriosis cases[6]. The importance of poultry as a major reservoir of human infections and chicken meat as an important pathway was further demonstrated in Belgium and the Netherlands. The consumption of chicken meat was temporarily reduced due to a dioxin contamination incident in 1999, which resulted in fewer cases of campylobacteriosis until consumption returned to pre-incident levels[7].

4.3. An EFSA Scientific Opinion[8] suggested that reducing the numbers of Campylobacter on carcases by 1 $\log_{10}$ unit (i.e. to 10% of the original level), would reduce the public health risk by between 50% and 90%, while reducing counts by more than 2 $\log_{10}$ units would reduce the public health risk by more than 90%.

4.4. The majority of UK chicken production is marketed through retail outlets as fresh chilled chicken. In 2010, 97% of retail sales were chilled chicken and 3% frozen[9].

4.5. A significant volume of chicken and turkey is also used in the production of food products (convenience meals) or in foodservice (restaurants). Although some UK poultry production is used for the latter, a significant proportion of chicken used for these products originates outside the UK (EU or third countries), often as frozen or pre-cooked product. Freezing is effective in reducing the Campylobacter risk, while thorough cooking eliminates it.

4.6. The evidence we have leads us to conclude that it is still appropriate to focus our effort on UK-produced fresh poultry, in particular retail chicken which constitutes the largest volume of fresh poultry consumed in the UK.

5. DISCUSSION

5.1. FSA monitoring data is showing no significant change in the levels of Campylobacter on chicken carcases at the end of processing (Annexe 4). Over the same period, there has been a small increase in the number of cases of human campylobacteriosis (paragraph 4.1).

[5] These estimates are expected to change with publication of the extension to the IID2 project later in 2013. Although headline figures (cases and costs) will change, Campylobacter will remain the most significant cause of human foodborne disease in the UK.

[6] http://www.efsa.europa.eu/en/efsajournal/pub/1437.htm

[7] The Dioxin Crisis as Experiment To Determine Poultry-Related *Campylobacter* Enteritis http://wwwnc.cdc.gov/eid/article/8/1/01-0129_article.htm

[8] Scientific Opinion on *Campylobacter* in broiler meat production: control options and performance objectives and/or targets at different stages of the food chain: http://www.efsa.europa.eu/en/efsajournal/doc/2105.pdf

[9] Kantar, 2010

Action taken to date

5.2. Since its formation in 2009, the Joint Industry-Government Working Group on Campylobacter (JWG)[10] has brought together key players from across industry, Defra and the FSA. Their commitment to collaborate on this issue is a significant achievement, agreeing and publishing a target for the reduction of Campylobacter on UK-produced fresh chicken and working to an agreed Joint Action Plan for research, trials and other actions aimed at delivering the target. Action taken to date is summarised very briefly in Annexe 2. We believe that the JWG should continue to have a strong role but that initiatives by individual industry leaders could also be highly effective.

5.3. Preventing or delaying initial flock colonisation with Campylobacter would reduce the level of risk that then needs to be managed across the rest of the chain. Much of the reduction predicted by 2013 was expected to result from the introduction of a new on-farm biosecurity standard as part of the Red Tractor Assurance Chicken Production scheme in April 2011[11]. The lack of impact of this change might have been because the new requirements of the standard were flawed, or because they have not been applied by producers with sufficient consistency to be effective. Results from trials and research suggest the latter is the case.

5.4. We consider there is further scope for developing more effective good hygienic practice and biosecurity measures on farms. Fully effective biosecurity – that prevents colonisation at least until the flock is 'thinned'[12] – is difficult to achieve and requires consistent application of many small controls. It requires producers to develop a culture and controls more similar to those of a food factory. There are costs associated with this change of approach, but equally there are costs associated with the current level of flock contamination.

5.5. Some surface antimicrobial treatments (such as lactic acid, chlorine compounds and peroxyacetic acid) have been tried in the UK or in other countries but none are yet approved for use on poultry within the EU. As the Board advised in January 2012, the UK should consider each such application on its merits and support their use if they are proven to be safe and effective, while ensuring they do not lead to a weakening of hygiene controls earlier in the process. Although these surface treatments may not be available for application in the short term, and consumers might need to be persuaded of their benefits, in due course they could provide a valuable and effective additional measure to reduce Campylobacter on poultry meat.

[10] JWG Members: FSA, Defra, British Poultry Council (BPC), 2Sisters, Moy Park, Faccenda, Bernard Matthews, Cargill, Aviagen, NFU, British Retail Consortium (BRC), Tesco, Sainsbury, M&S, Asda, Waitrose, Morrisons, Co-op

[11] http://www.food.gov.uk/multimedia/pdfs/campytarget.pdf

[12] Thinning is the removal of a portion of the flock (partial depopulation) before the whole of the flock in the shed is removed to be sent for slaughter (flock clearance). It is a common practice throughout the UK poultry industry, allowing farmers to maximise the use of space for rearing birds while meeting the necessary welfare requirements for stocking density and consumer demands for birds of different sizes.

5.6. Although a considerable amount of effort and expenditure has been put to taking the Joint Action Plan forward, the lack of concrete progress is disappointing. Since 2010, the FSA has already committed £5.1 million to support research that underpins work in this area. In addition to this are the contributions made by Defra and BBSRC and by the industry, both though funding support and contributions in-kind. We expect to continue to invest in further relevant research in collaboration with other funders.

Wider Context - EU and beyond

5.7. Campylobacteriosis is also the top foodborne problem across the EU with an estimated 9 million cases, and the cost to public health systems and to lost productivity in the EU is estimated by EFSA to be around €2.4 billion a year[13].

5.8. As part of a wider programme to review meat inspection in all species, European Commission (EC) proposals on the future of poultry meat inspection are expected to be presented in the autumn of 2013. These proposals are likely to relate primarily to strengthening current good hygiene practices for control on-farm and in processing plants and to expanding the information provided in Food Chain Information to assist risk management in the slaughterhouse. The UK Government and industry has indicated support for this approach at the relevant Commission Working Group and we have been in dialogue with Commission officials on this issue since February 2013.

5.9. In addition, the EC proposals may include the establishment of a slaughterhouse process hygiene criterion. This would define a level of contamination above which corrective action is required. A recent Dutch study[14] concluded that an upper level of 1000 cfu/g could deliver a significant reduction in risk to consumers. This limit might form the basis for a future EU process hygiene criterion. Initial Commission proposals on this subject are expected during autumn 2013.

5.10. The JWG, researchers, and the policy team have investigated what the UK can learn from examples of more effective Campylobacter reduction strategies in other countries in addition to differences in processing practices. For example, countries that consume a higher proportion of frozen chicken tend to have a lower incidence of campylobacteriosis.

5.11. We continue to collaborate with the New Zealand Ministry for Primary Industries (MPI) who achieved a reduction in both Campylobacter counts on poultry carcasses and human cases, by setting industry performance targets. Industry has met these standards through applying practices consistent with Codex guidelines - improved carcase dressing (plucking, evisceration, washing) and decontamination procedures including the use

[13] http://www.efsa.europa.eu/en/topics/topic/campylobacter.htm
[14] http://www.rivm.nl/en/Documents_and_publications/Scientific/Reports/2013/juni/Microbiological_criteria_as_a_decision_tool_for_controlling_Campylobacter_in_the_broiler_meat_chain

of chlorinated water in processing. The USA introduced a new performance standard (FSIS Notice) for Campylobacter in chilled chicken and turkey carcasses at slaughterhouses in July 2011. 'Verification sets' of samples are tested by FSIS against the standard.

What needs to change?

5.12. There is not currently a technical "silver bullet" solution to the problem of Campylobacter in chicken. Achieving significant progress is therefore not about the rolling out of a single technical intervention – rather it is about cultural change. There is presently an acceptance in the industry that in the absence of a "silver bullet" a high level of contamination will inevitably occur, and a sense of powerlessness in addressing the issue.

5.13. Where businesses do identify changes to practice that could reduce Campylobacter there is sometimes an assumption that the cost impact (e.g. changes in "thinning") or issues with consumer acceptability (e.g. antimicrobial washes) make the changes unfeasible.

5.14. The collaborative approach exemplified in the JWG has many strengths in terms of delivering change but also some potential weaknesses. We would like to continue to work in partnership where there are benefits to public health in doing so – for example in sharing investment and the learning from research projects, and in identifying best practice.

5.15. A potential weakness of a model based on close collaboration can be a blurring of roles and responsibilities and a lack of accountability. This strategy seeks to address that risk by clarifying the responsibilities of industry and the regulator in terms of reducing Campylobacter – setting some new expectations of industry, and making some new commitments on our own behalf.

5.16. It is the responsibility of the food industry – producers, processors and retailers - to ensure that the food they produce and sell is safe. The current level of contamination of raw poultry on sale in the UK continues to present an unacceptably high public health burden, and the primary responsibility to address this problem rests with poultry producers, processors and retailers. They are also in the strongest position to make the step-change necessary to improve public health outcomes. It is therefore the responsibility of industry to find solutions to the challenge of Campylobacter in chicken and its effects on public health. We will support them in this.

5.17. It is the responsibility of government – in this case led by the FSA – to clear regulatory obstacles to improving the safety of food out of the way, to create an environment in which the right incentives exist to drive the desired public health outcomes, and to support consumers to make safe and informed choices. We hope that industry will support us in this.

5.18. Our commitment to joint working remains. But joint working does not mean that all actions have to be first agreed by all parties. We believe that, for

producers, processors and retailers alike, reduction of Campylobacter is no longer simply a pre-competitive technical issue, but instead needs to become a core business priority. We welcome initiatives by individual organisations to drive forward action more quickly. We want to encourage such actions.

5.19. We will also continue to work in partnership with others to educate, and influence consumers about their role in good food hygiene at home, and those working in the catering industry, so that they can take protective action against the risk of infection from poultry. In addition to direct engagement with consumers, e.g. through the annual Food safety Week, we will also seek to work through enforcement officials in local government to communicate the general principles of good food hygiene across the catering and food production industries, and include where appropriate specific information about the risk of Campylobacter and how it can be controlled.

5.20. For our part, the focus of new FSA action will be to:

a) Improve the amount and quality of information about Campylobacter levels that is available at key stages of the supply chain, to support and incentivise more effective risk management.

b) Address regulatory barriers to the adoption of safe and effective technological innovations for reducing Campylobacter risks at key stages in the food supply chain.

c) Work with local government partners and others to raise awareness of Campylobacter and ensure that food businesses using chilled poultry meat are aware of the risks and managing them appropriately.

d) Continue and increase our support to research programmes into vaccination and other possible long term interventions to address the issue.

e) Drive changes in behaviour and approach, using tools including regulation if appropriate.

5.21. Our expectation is that industry will focus on actions to:

a) Continue to improve the effectiveness of biosecurity measures on farms to prevent flock colonisation with Campylobacter;

b) Ensure that steps involved in slaughter and processing are effective in preventing contamination of carcases;

c) Continue to work on packaging and other initiatives that will help consumers and food service kitchens to understand the risk that poultry meat poses and how they can reduce cross contamination; and

d) Develop and implement new interventions that reduce contamination when applied at production scale.

Stepping up a gear

5.22. Annexe 1 proposes a refreshed strategy to reduce Campylobacteriosis from poultry sources. We retain our objective for reducing the level of Campylobacter contamination on UK-produced raw poultry. We propose a vision that describes the future that we are seeking to reach, a clearer description of the respective roles of Government and Industry, the approaches we intend to employ, a new focus for FSA action and our expectations for industry action.

5.23. We continue to support the 2010 target for the reduction of Campylobacter on UK-produced chicken as agreed with the JWG. We will consider with the JWG and others whether additional targets or changes to targets would be conducive to achieving our objective of reduced Campylobacteriosis from poultry sources and return to the Board should changes to targets be proposed.

5.24. Our new focus for FSA action, as the lead Government Department, will be to ensure that information is made available throughout the poultry supply and marketing chain to support and incentivise more effective risk management and a greater level of awareness amongst purchasers, whether they are commercial purchasers or consumers. For example, determination of the levels of Campylobacter present in the caeca of birds received from farms would give an indication of how well colonisation had been controlled on farm and testing of neck skins from the same batch would indicate how effective the plant had been in controlling contamination during processing. Such information could be fed back to farmers, many of whom are unaware of the Campylobacter status of their flocks. This information would help farmers and slaughterhouses to benchmark their own performance and provide transparency of performance across the industry. Collection and dissemination of such new evidence therefore forms a key part of the actions we propose.

5.25. We will work with the industry to ensure that production of this information can be introduced effectively while also ensuring that it takes place as quickly as possible.

5.26. We have identified some areas where we have an expectation that industry will take action, such as driving best practice and consistent adherence to on-farm biosecurity measures; adopting testing of flocks pre-slaughter and during processing as standard practice; adjusting plucking, evisceration and washing equipment during processing to reduce contamination; and early adoption of safe, effective processing interventions or packaging solutions. We also believe that the retailers could play a greater part in consumer education through their well-developed existing channels for communication with their customers.

5.27. The extensive work that has been undertaken through the JWG's Joint Action Plan has provided a large body of new information about a number of candidate interventions. Some creative options for change and

improvement have been identified and are being pursued, such as the examples below. We believe that there is scope for businesses to continue to drive forward with these and similar interventions and implement them at production scale.

A novel 'rapid surface chilling' process which exposes processed carcases to extremely cold gases for a short period of time has achieved a significant reduction of Campylobacter. The process will shortly undergo trials at close to production scale to ensure that the process remains effective and treated birds can be marketed as 'fresh' poultrymeat (as opposed to frozen). If successful, the process could be available for commercial installation from 2014.

The effect of offering financial incentives to growers for producing Campylobacter free flocks at thin and at depopulation is being investigated with a small selection of model farms for which the Campylobacter history is available. The incentive will apply for each shed they keep clear of Campylobacter, based on farm test results.

The washing processes in the slaughterhouse have been identified as variable in terms of reducing Campylobacter load. Processors are working together and with equipment suppliers to identify how to improve the consistency and effectiveness of current equipment.

6. IMPACT

6.1. Current estimates by the FSA indicate that the cost of human campylobacteriosis in the UK is around £900m per year, out of a total of around £1.5 billion for all foodborne infections. In addition to the attendant economic costs (costs of treatment, loss of productivity, earnings or educational opportunity), cases cause inconvenience, discomfort and misery to those who become infected and a small proportion of cases result in death or long-term consequences, such as reactive arthritis, irritable bowel syndrome and Guillain-Barré syndrome, the latter of which affects the peripheral nervous system.

6.2. In addition to a reduction in human disease, achieving our objective of lower levels of Campylobacter on UK-produced poultry would also put the UK poultry industry in a strong competitive position. Any improvements in on-farm hygiene and biosecurity will also contribute to the control of other poultry-related diseases with public health or animal significance, such as avian influenza.

6.3. The improvements sought are likely to add to production costs. Set against this there already exists a significant recurring disease burden and associated economic cost for Campylobacter illnesses that occur each year, which is borne by individuals and taxpayers. On this basis, each 1%

reduction in the number of UK human cases could result in a saving of £9m to the UK economy in terms of the reduced costs of ill health.

6.4. Our aim is to achieve a significant reduction in foodborne illness attributable to poultry in an economically effective way that avoids UK products being substituted by products from outside the UK that could have higher levels of contamination.

7. CONSULTATION

7.1. Drafts of this paper have been shared with members of the Joint Working Group on Campylobacter, including Defra.

8. DEVOLUTION IMPLICATIONS

8.1. No implications have been identified. Poultry production and its enforcement are undertaken on a UK-wide basis. Government interest in Campylobacter is coordinated through a cross-government Campylobacter working group and further developments will be coordinated with health and agriculture departments through FSA offices in the devolved UK countries.

9. CONCLUSION AND RECOMMENDATIONS

9.1. This paper articulates the need for a renewed impetus to achieving changes that will reduce contamination levels on raw UK poultry and thereby reduce the burden of campylobacteriosis in UK consumers. It proposes an approach and actions that will provide this new impetus. We will continue to work on implementation plans with industry partners, focusing first on those actions that would lead to improvements in the short-term but meanwhile we will welcome unilateral acts of leadership by businesses that see the opportunity to make a difference to Campylobacter in their own supply chains.

9.2. If we pursue areas which offer real potential with renewed vigour and determination, and unleash the commercial creativity of food businesses then we stand the best chance of reaching our target of lower levels of contamination of poultry on sale in the UK. In doing so industry and government will jointly make a substantial contribution to public health.

9.3. The Board is asked:

- To **discuss** and **agree** the refreshed strategy at Annexe 1, in particular:
  - Our statement of the distinct but complementary roles of government and industry;
  - The new focus proposed for FSA action; and
  - That when interventions are proven to be safe and effective in reducing contamination, the FSA should support their introduction,

which may include work to increase the acceptability of the interventions to consumers.

- To **note** our intention to continue to engage industry partners in technical discussions through the Joint Working Group and work with the JWG and others to review its role and membership, and the need for other fora, in order to best deliver a step change in outcomes.

- To **note** our intention to continue bilateral discussions with business leaders in production, processing and retail sectors, with the intention of ensuring a focus on Campylobacter reduction as a business imperative and to **seek opportunities** to influence at FSA Board level through contact with the non-executive members of key business' boards.

ANNEXE 1

REFRESHED STRATEGY TO REDUCE CAMPYLOBACTERIOSIS FROM POULTRY

A1 OVERARCHING OBJECTIVE

A1.1 The FSA's objective remains to secure a significant reduction in Campylobacter contamination present on UK-produced raw poultry.

A1.2 If this is successful, the evidence tells us that we can expect a reduction in human illnesses to follow.

A1.3 Delivery against this objective will require actions on the part of industry, and government.

A2 VISION

A2.1

- That the UK industry understands and accepts its full responsibility for the production of chicken meat that is significantly less contaminated with Campylobacter than in 2008, and the UK Government accepts its role in supporting and facilitating this.
- That incentives for Campylobacter reduction play a significant role in raising hygienic production throughout the food chain, from primary production through to sale to the final consumer.
- That industry builds upon the culture of continuous improvement across the poultry supply chain and delivers a step change in levels of campylobacter contamination.
- That end users (consumers and caterers) are more aware of the food safety risk from raw poultry and increasingly take appropriate precautions and seek to purchase lower risk products.
- That more consumers adopt as standard domestic behaviours that reduce the risk of infection from the storage, handling and cooking of foods, including raw poultry.

A3 ROLES AND RESPONSIBILITIES

Industry

A3.1 Food safety legislation is clear that food businesses are responsible for the safety of food they place on the market. In the case of raw poultry, where current levels of contamination with Campylobacter result in an unacceptably large burden on public health, this responsibility rests with poultry producers, processors and retailers. These businesses are also

best placed to take the action needed.

A3.2 In addition to taking action along the production, processing and retail chain, industry's role extends to providing advice and information to consumers who purchase and consume these products that are marketed by the industry.

Government

A3.3 We recognise that central and local Government can also play a key role in the successful reduction of risk to consumers, for example by:

a) Setting strategic public health priorities.

b) Creating the environment to foster collaboration and coordinate action.

c) Working with the industry to set targets.

d) Providing independent, expert technical advice on interventions and their anticipated public health impact.

e) Understanding and managing current or future regulatory constraints (e.g. EU or international) or regulatory levers.

f) Supporting scientific research to underpin development of solutions.

g) Providing guidance to industry and enforcement bodies.

h) Enforcing food hygiene legislation and informing businesses about the risk of Campylobacter and how to control it.

A3.4 The FSA will also continue to inform, influence and direct consumers about their role in good food hygiene at home and their right to demand less contaminated products.

A3.5 The FSA will work in partnership to deliver these aims with Health Departments, Public Health bodies, Local Authorities, Agriculture and Rural Development Departments, industry stakeholders and non-governmental consumer groups throughout the UK.

A4 TARGET

A4.1 Although it is not the sole source of cases of human campylobacteriosis, a range of sources and studies indicate that the majority of cases can be linked, either directly or indirectly to poultry and that reducing the level of contamination of fresh poultry has a positive impact in reducing human illness. This makes the reduction of Campylobacter by the effective control and reduction of contamination of raw poultry a clear objective that can have an impact on public health and our targets should be set around achieving this objective.

A4.2 Once this strategy succeeds in reducing Campylobacter in poultry, and other sources become as significant in relative terms, it would then be

appropriate to widen the scope of our attention to include consideration of those currently less significant foodborne sources and how they could be controlled more effectively. Until that time, raw poultry meat should remain our focus for action, and in particular raw chicken as this makes up the largest proportion of poultry meat consumed in the UK.

A4.3 We therefore propose that at present we retain the existing target, agreed through the Joint Industry-Government Working Group on Campylobacter (JWG) in 2010, to reduce the percentage of the most heavily contaminated chickens at the end of the slaughter process from 27% in 2008 to 10% by 2015. When set in 2010, this was considered to be what could be achieved through the application of interventions available at that time, based on available evidence and expert opinion, and could result in a significant impact on human cases.

A4.4 We will consider with the JWG and others whether additional targets or changes to targets would be conducive to achieving our objective of reduced Campylobacteriosis from poultry sources and return to the Board should changes to targets be proposed.

A5 APPROACHES

A5.1 More information is needed about the levels of Campylobacter at different stages of production. This will provide a clear baseline from which to work, identify the relative contributions of different stages to the control of contamination, and facilitate comparison by the industry of the effectiveness of different practices in reducing Campylobacter. It would also provide a basis for incentive mechanisms to be introduced.

A5.2 The FSA will continue to work in close partnership with industry stakeholders, through the JWG to build on the effective collaboration across the industry that has been developed.

A5.3 Our target to reduce the contamination of poultry is not to be achieved at any price. We are aware of the competitiveness of the UK market and that the cost and impact of improvements will need to be such that they do not result in undesirable unintended consequences.

A5.4 However, this must be set against the need for change and for a reduction in levels of contamination on UK poultry which contributes a large proportion of human cases of illness every year.

A6 ACTIONS

A6.1 We consider that, taken together, achievement of the following objectives should result in a significant reduction in the number of cases of human illness, through reduced levels of Campylobacter on UK-produced fresh chicken and reduced transmission to consumers.

A6.2 Many of the proposed actions associated with achievement of these objectives will need to be industry-led, and as such they are expressed here as our expectations of industry for action. The new focus of FSA action will be to:

a) Improve the amount and quality of information about Campylobacter levels that is available at key stages of the supply chain, to support and incentivise more effective risk management.

b) Address regulatory barriers to the adoption of safe and effective technological innovations for reducing Campylobacter risks at key stages in the food supply chain.

c) Work with local government partners and others to raise awareness of Campylobacter and ensure that food businesses using chilled chicken are aware of the risks and managing them appropriately.

d) Continue and increase our support to research programmes into vaccination and other possible long term interventions to address the issue.

e) Drive changes in behaviour and approach, using tools including regulation if appropriate.

A6.3 In recognising the complexity of Campylobacter as an organism, we will also continue to invest in science and innovation and to seek technological solutions where we consider this to be appropriate and where there is a role for government. For example, in conjunction with industry and other public funders we will continue to invest in scientific research that will underpin our understanding of the organism and its behaviour in the food chain and in humans and support the development of novel control measures. This includes our Joint Research Strategy with Defra and BBSRC, the priorities of which include work on vaccine development, the influence of feed and achieving consistent adherence to best practice by influencing human behaviour.

A6.4 The actions outlined below indicate a general approach which, if agreed, will be developed further in conjunction with partners in industry, elsewhere in government and non-governmental organisations to deliver effective change.

On farm / Primary Production

Objective

- Fewer broiler flocks are colonised with Campylobacter pre-slaughter.

Action for FSA

- Continue to contribute investment in science and innovation to explore technological solutions for on-farm controls.

Expectation for Industry Action

- Undertake comprehensive monitoring of flocks, pre-thin and pre-clearance (by boot socks) include results on Food Chain Information.
- Maximise effectiveness of biosecurity, working through third party assurance schemes to drive a change in culture at all levels in businesses, and the consistent application of best practice.
- Incentivise producers to reduce flock colonisation by rewarding those who have negative or low levels of colonisation pre-slaughter.
- Focus particularly on avoiding the practice of thinning or developing effective thinning practices that minimise the chances of colonisation of the birds in the poultry house.
- Minimise the impact of transportation of birds to slaughter on the spread of contamination by maximising the effectiveness of crate hygiene, minimise stress and optimising time spent in crates.

Slaughterhouse/Processing

Objective

- Reduced percentage of carcases with levels of Campylobacter over 1000 cfu/g post-chill.

Action for FSA

- Undertake a programme of monitoring levels on birds coming from the farm (caeca) and at the end (skin) of the slaughter line to assess the effectiveness of the slaughterhouse in controlling contamination on the carcase.
- Incorporate a specific field in the food chain information (FCI) form to record on farm Campylobacter test results for flocks entering the slaughterhouse or other indicators of possible flock colonisation; collate information received.
- Take forward negotiation in Europe on poultrymeat inspections including proposals for a process hygiene criteria and better use of FCI.
- Address regulatory barriers to adoption of new technologies to reduce surface contamination, such as surface chilling, anti-microbial washes.

Expectation for Industry Action

- Sharpen focus on current good hygienic practices in relation to plucking, evisceration, washing and chilling processes to ensure these processes are applied effectively and consistently, utilising improved understanding of the influence of human behaviour and a change in culture at all levels in businesses to reduce spread of contamination from the gut and feathers to the surfaces of the carcase, as well as between carcases.
- Require information about pre-slaughter flock testing or other indicators of flock colonisation as part of FCI and process slaughter batches to enable risk to be managed.
- Adopt and implement new in-line or end-of-line interventions as they become available.
- Incentivise producers by rewarding those who have negative or low levels of flock contamination.

Retailers

Objective

- Contamination levels on all fresh poultry are less than 1000cfu/g (preferably absent).

Action for FSA

- Carry out regular surveys of fresh poultry at retail sale and publish results.
- Educate consumers about hygienic handling of product, packaging choices, the effectiveness of freezing as a control measure, and the effectiveness of cooking to eliminate Campylobacter.

Expectation for Retail Industry Action

- Indicate to consumers products that present a lower Campylobacter risk (e.g. frozen or skinless products).
- Utilise incentive schemes back down the supply chain, to minimise on-farm colonisation and improve control of contamination during processing.
- Develop packaging solutions which reduce Campylobacter load during storage (modified atmosphere packaging), and minimise cross contamination in the kitchen.
- Drive the adoption and promotion of safe effective surface treatments.
- Provide clear consumer information about hygienic handling of product, safe cooking, hygienic disposal of packaging, and methods to reduce cross-contamination.

Catering

Objective

- Caterers aware of risks and effectively control risk of illness when preparing potentially contaminated foods.

Action for FSA

- Education, guidance, enforcement.
- Continue to support the achievement and maintenance of high hygiene standards by operators, e.g. via food hygiene ratings schemes and food safety management systems.

Expectation for Catering Industry Action

- Recognise that frozen product presents lower Campylobacter risk.
- Promote culture and behaviours that minimise risks from cross-contamination or under-cooking.

Good hygiene practice adhered to at all times in the trade.

Consumers

Objective

- Consumers aware of risks, exercise choice and apply good hygienic practice in the kitchen.

Action for FSA

- Invest in research into the interaction of the Campylobacter organism with human immunity, impact on susceptibility to disease, impact of drugs and other concurrent illness.
- Undertake studies on how to change consumer behaviour around food preparation and in terms of general hand hygiene.
- Raise and maintain consumer awareness of Campylobacter in chickens as a significant public health issue, e.g. use Campylobacter as the focus for Food Safety Week 2014.
- Work with NGOs such as Which? to communicate about relevant issues to consumers and to support consumer initiatives.

Expectation for Industry Action

- Play an active role in consumer education, both in terms of awareness of risks and risk mitigation, carrying out activities such as:
    - Educating consumers to make informed choices, such as choosing products that have inherently lower risk (e.g. frozen birds or skinless portions).
    - Informing and educating consumers about new safe and effective interventions with the aim of increasing their acceptability by consumers.
    - Providing general hygiene advice to consumers (hand-washing,

kitchen hygiene) as well as messages specific to risks from poultry.

- The FSA will play a role in facilitating and supporting those initiatives.

ANNEXE 2

WORK CO-ORDINATED TO DATE BY THE JOINT INDUSTRY-GOVERNMENT WORKING GROUP ON CAMPYLOBACTER

Since its formation in 2009, the Joint Industry-Government Working Group on Campylobacter (JWG) has developed to become a valuable and effective forum for sharing information and coordinating actions by members. It has established a Joint Action Plan of research, trials and other actions (such as changes to assurance scheme standards) to assess the efficacy of interventions that includes over 40 current projects and 20 further actions that have been completed, and it was the JWG that developed and agreed the reduction target that was published in 2010.

On farm

A new requirement was added to the Red Tractor Assured Chicken Production Poultry Standard[15], to require the biosecure area is defined by a physical barrier or can be clearly marked off and that dedicated or disposable footwear should be changed when crossing this barrier to prevent Campylobacter contamination being transferred between houses. Although this was successfully adopted – all scheme members were found to be compliant in audits by April 2012 – this has not resulted in the expected reduction of contamination on birds. It is unclear whether this is due to the standard being flawed or being applied insufficiently consistently to be as effective as expected. Clarifying the requirements for the hygiene barrier and the inclusion of a recommendation to undertake on farm testing prior to slaughter are currently under discussion.

A range of interventions that have been trialled on-farm, including the use of hygiene barriers, fly screens, clothing changes, 'penning' turkeys to segregate them from the rest of the flock for thinning and showering on entry to and exit from turkey houses, and the use of treated drinking water or feed supplements (omega-3 rich oils); results to date have not shown the ability to deliver effective and consistent control of Campylobacter.

A trial is underway to determine the colonisation outcomes for a number of 'model' farms that actively applied biosecurity consistently with control farms, receive feedback of on-farm testing results and compare these with the outcomes on control farms. Results to date suggest that some improvement can be achieved in reducing colonisation (10% improvement in negative flocks). Data from the study is currently being subjected to detailed analysis to provide a more accurate statistical assessment of impact.

Work to develop a rapid 'on farm' test for Campylobacter has delivered some promising successes. Two tests that have adequate sensitivity and selectivity have been developed for detecting the presence of Campylobacter in a flock by testing of boot-swabs (boot socks) from poultry houses. Both are DNA-based and cost around £10 per test (i.e. per flock) and offer the potential to obtain accurate indications of flock status at a reasonable cost. For one, samples are posted to the

[15] Poultry Standard, Broiler and Poussin v2.0, April 2011.

lab and results provided to the farm on the same day that samples are received. This test is currently being applied in the model farms project. The other uses a portable detection system (LAMP) and can produce a result within 4 hours but would require investment (£8k) in the test equipment on site. This test will shortly be trialled on Turkey farms.

These trials are supported by an extensive programme of research that includes microbiological modelling through the food chain to assess which steps are most influential in offering opportunities for controlling contamination.

Transport

Work is underway to implement and improve the best practice guidance for the cleaning and disinfection of crates, modules and decks of lorries used to transport birds from the farm to the slaughterhouse. Impregnation of crates with silver ions has been shown to reduce contamination on crate surfaces but no reduction of flock contamination has been observed following their introduction. A newly designed crate washer is currently being evaluated by one processor and trials with hot water dipping of both crates and modules is being investigated by a turkey processor.

Processing

Trials have indicated that a number of treatments are ineffective, including treating process water used to wash the chicken (while remaining within limits for potable water), with ozone chlorine dioxide or an electric current (electrolysed water) as well as the use of hot water. Treatment of chicken meat with UV light has some effect but use is currently not practical due to the production of unpleasant odours.

Monitoring of changes in contamination levels on birds as they travel down the processing line has provided valuable information about which process steps are most variable in their impact, suggesting that they offer scope for optimisation, these being primarily at evisceration, washing (particularly the 'inside-outside' wash before chilling) and chilling. Information is also being gathered on the production process to correlate variables with contamination levels.

A novel process of rapid surface chilling the surface of birds with extremely cold gases appears to offer worthwhile reductions in numbers. Following promising small-scale trials, further off-line trials are planned later in 2013 for a prototype machine at commercial scale.

Catering/retail

The majority of UK whole chickens at retail are now packed in heat sealed non-leak packaging, which is expected to reduce cross contamination in store and at home. Labelling also includes appropriate advice about the safe handling and cooking of the product. The introduction of leak proof packaging has been accompanied by the use of modified atmosphere packaging which also may have an effect on Campylobacter numbers.

Consumers

A series of consumer forums were held across the UK to assess knowledge about

Campylobacter and attitudes to a range of potential antimicrobial treatments. Following these, a more structured piece of research was commissioned to assess the attitudes of consumers to a range of poultry decontamination treatments has indicated that there is greater initial acceptance of physical treatments than chemical ones, but that acceptance of chemical ones can be increased if people have access to further information that explains and clarifies the process. This is valuable in relation to how any new process can be implemented and accepted successfully.

A project to better understand what consumers actually do in their own kitchens, and why, has provided substantiated new insights into actual behaviours and the logic behind long-established practices. It also clarified that food preparation, and hygiene issues surrounding it, take place in the context of very varied activities and physical environments, including a range of personal interactions. This will inform how we can communicate most effectively with consumers on these issues in future and achieve positive changes in behaviour. Two waves of the FSA Food and You survey[16] have sought consumer views about a range of food safety issues including knowledge about foodborne illness and food hygiene practices.

Monitoring and surveillance

Following a successful development phase, to finalise issues with optimal methodology and sampling logistics, a 12 month survey of whole fresh chicken at retail in the UK is expected to start in autumn 2013. This will be conducted on the basis of market shares and include a comparison of birds produced by housed and non-housed (free-range and organic) methods.

A quality assurance programme based on proficiency testing for laboratories producing Campylobacter results for projects on the activities comprising the Joint Action Plan has been put in place. The technical ability of laboratories has improved as a result, with improved consistency between labs, and there is now sufficient technical capacity to support more monitoring at all stages of the supply chain.

[16] http://food.gov.uk/science/research/ssres/foodandyou/

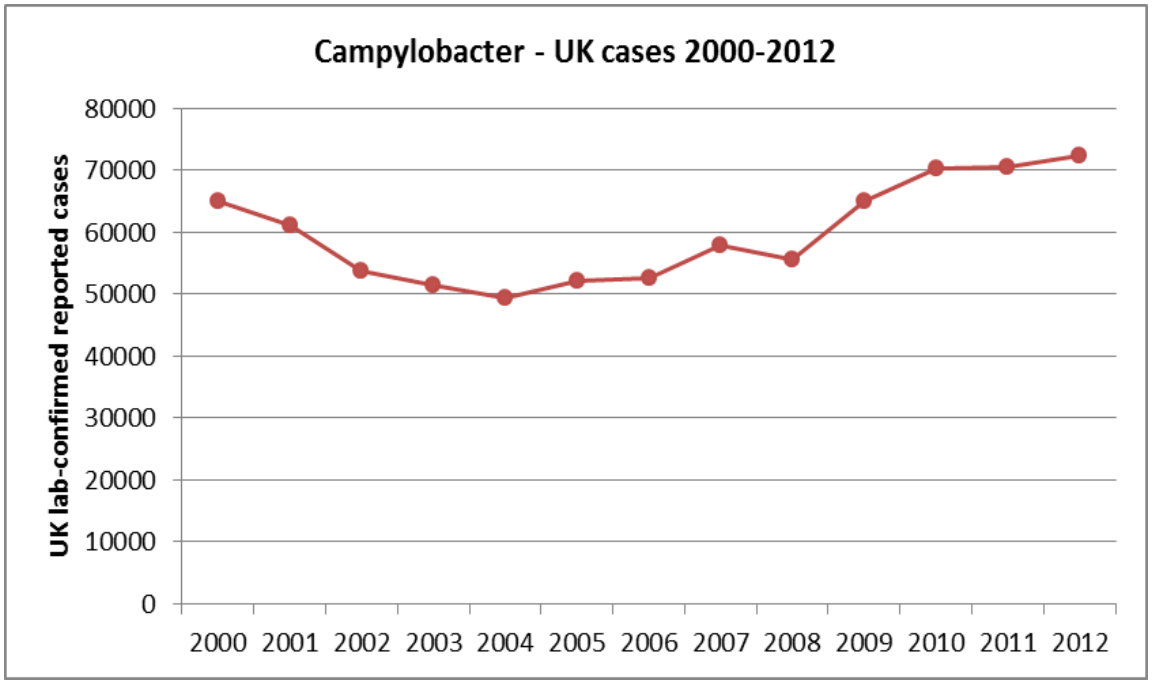
ANNEXE 3

UK DATA TRENDS FOR CAMPYLOBACTERIOSIS IN HUMANS

The rates of campylobacteriosis in the human population have been increasing since 2005, although the rate of increase has slowed since 2010.

It has not been possible to identify a specific cause for the increase since 2005.

In 2012 there were 72,562 laboratory-confirmed UK cases which, due to underreporting, are estimated to represent a total of around 460,000 actual cases in the community.



ANNEXE 4

CAMPYLOBACTER LEVELS ON CHICKEN – RESULTS FROM MONITORING DATA

The original target paper, published in 2010, estimated that reduction of the most contaminated chickens to the target level of 10% could result in a reduction of human campylobacteriosis of between 15% and 30%[17].

Monitoring results (table below), collected over a 12 month period between March 2012 and February 2013, show that there has been no statistically significant change[18] in the proportion of the most highly contaminated birds since 2008.

Monitoring is based on testing 500 samples per year. This sample size was calculated so that changes of more than 8% over 12 months would be expected to be statistically significant.

Monitoring is on-going and is planned to run until at least 2015. Results obtained since February 2013 also shown no change from the baseline.

	<100 cfu/g	**100-1,000 cfu/g**	**>1,000 cfu/g**
Baseline - 2008	42%	31%	27%
Data Mar 12 – Feb 13	**35%**	**35%**	**30%**
Change from baseline	No significant change	No significant change	No significant change
Model estimate for 2013	Improvement (higher % than 2008)		19%
Target 2015	Improvement (higher % than 2008)		10%

Our programme of work with the industry, directed towards the target to reduce the Campylobacter levels on UK-produced whole fresh chicken, has therefore so far delivered no measurable improvement.

[17] http://www.food.gov.uk/multimedia/pdfs/campytarget.pdf
[18] Chi–Square Test on a cross tabulation of results p=0.118