

FOODBORNE DISEASE STRATEGY

2010-15

AN FSA PROGRAMME FOR
THE REDUCTION OF
FOODBORNE DISEASE IN THE UK

Version 1.0

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FOODBORNE DISEASES STRATEGY 2010-15

Objectives, vision and approach



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Foodborne disease

Foodborne illness is defined by the World Health Organization as 'diseases, usually either infectious or toxic in nature, caused by agents that enter the body through the ingestion of food.'¹ Foodborne diseases are a serious and global problem. The WHO estimates that worldwide foodborne and waterborne diarrhoeal diseases taken together kill about 2.2 million people annually.

There may be a tendency to assume that much of this enormous burden of disease happens elsewhere in the world but we know that foodborne disease is also a major cause of illness in the UK population and imposes a significant burden on both infected individuals and the economy.

Although the majority of cases are mild, they are unpleasant and uncomfortable, result in absences from education or the workplace and place a significant demand on healthcare services. Occasionally cases can lead to serious or long-term conditions, or even death.

It is estimated that each year in the UK:

- around a million people suffer a foodborne illness
- around 20,000 people receive hospital treatment due to foodborne illness
- there are around 500 deaths caused by foodborne illness
- it costs us nearly £1.5 billion²

How do we get foodborne diseases?

Foodborne diseases can originate from a wide variety of different foods and be caused by many different pathogenic organisms (e.g. bacteria or viruses) that have contaminated them at some part of the food chain, between farm and fork. Foods that are most frequently associated with foodborne illness include meat, fish and poultry.

Illnesses can arise from these foods whether they are produced on large or small scale, purchased from major retailers or local markets, or whether home-cooked or prepared and eaten outside the home.

¹ <http://www.who.int/mediacentre/factsheets/fs237/en/>

² <http://www.food.gov.uk/science/researchpolicy/chiefsci/csreps/>

What can be done?

The FSA has identified a number of key outcomes in revised Strategy to 2015³, several of which will impact on levels of foodborne disease in the UK. These include ensuring that both food produced and sold in the UK and imported food is safe to eat, ensuring that consumers understand about safe food and that regulation is effective and risk-based and protects consumers.

The Food Standards Agency's Strategy to 2015 Our strategic objective is: safer food for the nation



The following sections outline the Strategy that the FSA has developed to identify and co-ordinate actions required to reduce foodborne disease.

³ <http://www.food.gov.uk/news/newsarchive/2011/mar/strategyto2015>

A renewed strategy to reduce UK foodborne disease

Since its inception in 2000, food safety has been the FSA's top priority and the reduction of foodborne disease has been a key objective in ensuring food safety. In 2001, the FSA set itself a target to reduce the incidence of UK foodborne disease by 20% by the end of 2005 and established the Foodborne Disease Strategy (FDS) to achieve this target.

Although by 2005 there had been a considerable reduction (19.2%) in the level of foodborne disease, the cost and burden remained unacceptably high. A renewed FDS for 2005-2010 was developed with the aim of reducing foodborne disease further, but there has been little significant change in the level of UK foodborne disease since 2005.

The FSA maintains that much of the current burden of foodborne illness could be avoided and that there remains scope across the food chain for further actions to reduce levels of disease. This is reflected in our revised Strategy to 2015 (page5), which highlights the need to ensure food is safe to eat (Outcome 1) and that consumers understand about safe food (Outcome 4).

Benefits of Reducing Foodborne Disease

- Reduced morbidity, mortality and demands on healthcare services
- Reduction in absences from education, or loss of productivity at work
- Increased consumer confidence in food safety

Cost of Reducing Foodborne Disease

- The annual cost of foodborne disease in the UK was estimated in 2008 to be approximately £1.5 billion.

The Bottom line

- We estimate that each 1% reduction in case numbers would mean around 10,000 fewer cases and save the economy around £15 million per year

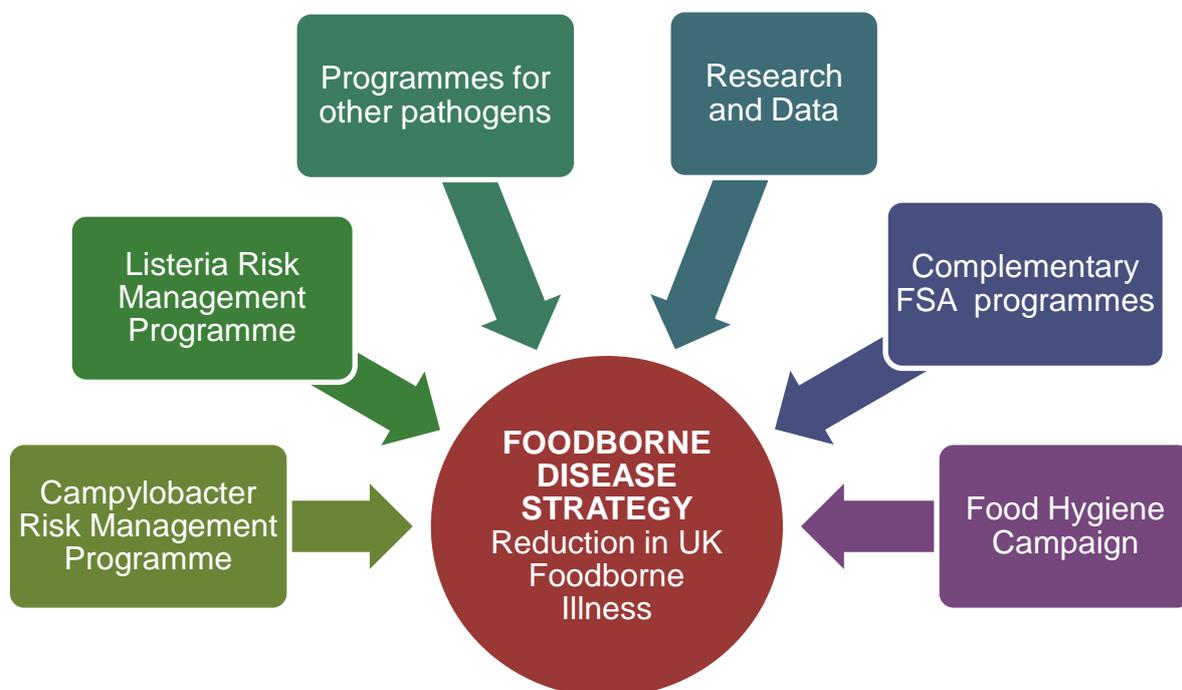
We believe that reducing foodborne illness has many benefits, both to the individual and wider society. In the past, the value of these benefits (reduction of burden/cost) has outweighed the cost of the interventions undertaken by the FSA to achieve them, and we are confident that this cost-benefit relationship will continue to apply in the future.

How we will achieve our vision

We have been working to reduce foodborne disease in the UK since the Food Standards FSA was formed in 2000. Through our work we have developed and increased the science and evidence base on the nature and control of foodborne illnesses in the UK. We have also developed and implemented a wide range of actions and interventions in pursuit of reducing foodborne illness and its sources, across the food chain. We have evaluated the impact of these activities⁴ and the outcomes of this evaluation have helped us to shape this new Strategy.

During the development of the FSA's Strategy for 2010-2015 we used our evidence base to establish the priority organisms that we need to tackle to further reduce foodborne disease⁵. We are acting on this by developing specific Risk Management Programmes, aimed at reducing the levels and severity of disease caused by those pathogens identified as causing the greatest burden of disease. In addition to our work to reduce the levels of disease caused by specific pathogens we will continue to raise awareness and improve understanding of foodborne disease through a refreshed Food Hygiene Campaign incorporating effective food safety messages.

We will also continue to monitor levels of disease caused by pathogens not specifically addressed by individual risk management programmes and emerging risks, to ensure that they can be addressed should they become significant during the life of the strategy. We will also continue to support research to further our evidence base and evaluate the effect of interventions designed to reduce foodborne disease. These approaches, and our main priorities, are outlined in the figure below.



⁴ <http://www.food.gov.uk/safereating/safcom/fdscg/fds/>

⁵ <http://www.food.gov.uk/safereating/foodchain/>

Within the FSA, the FDS will be managed by a strategic Steering Board, chaired by the Director of the Food Safety Group and include the Chief Scientist, a FSA Director from the Devolved Administrations, the Director of Communications and the Head of Hygiene and Microbiology Division. The Steering Board will be responsible for ensuring the strategic direction of the FDS, overseeing and reporting on progress and identifying any changes in direction that are required.

Complementary work programmes

The Foodborne Diseases Strategy is one of a number of programmes within the FSA that aim to contribute to the reduction of UK foodborne disease, including programmes on hygiene policy and legislation, imported foods, compliance, enforcement and support for food businesses. A description of the full range of these activities, by FSA and other departments, is provided on page 9. We recognise the need to co-ordinate the work of these programmes to maximise their benefits.

The FSA Operations Group, which was formed on 1 April 2010 when the Meat Hygiene Service and the FSA merged, has UK responsibility for delivery of official feed and food controls⁶, as well as working to support the work of local authority enforcement of food and feed hygiene and food standards. Many of the activities undertaken within the FSA Operations Group are specifically aimed at ensuring that the food the public consumes is safe and are complementary to the aims of the FDS.

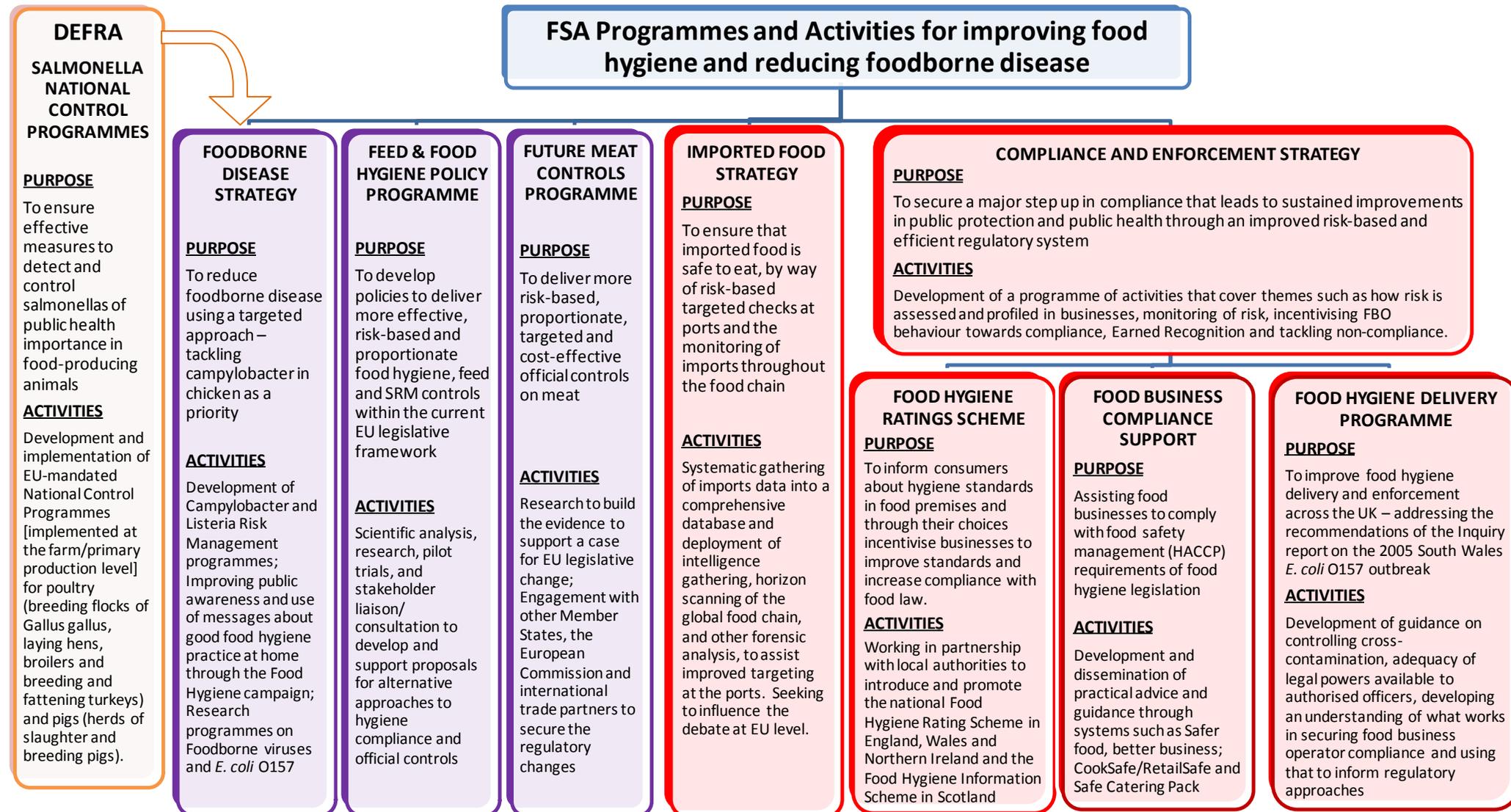
In addition to the regulatory activities undertaken to ensure compliance, there are a range of other specific programmes that have been established contribute to the reduction of UK foodborne disease, such as:

- work in programmes to ensure that enforcement is effective, risk-based and proportionate, and that it focuses on areas of highest risk;
- work on tools to assist catering and other food businesses to comply with food hygiene legislation
- work on food hygiene rating schemes that will inform consumer choices about where to eat or buy food and encourage businesses to improve standards at their premises.

We will ensure that the FDS is effectively co-ordinated with all of these programmes to avoid duplication of effort, ensure consistency of message and approach, and highlight any gaps that require addressing.

⁶ <http://www.food.gov.uk/foodindustry/regulation/europeleg/feedandfood/>

FDS and Complementary FSA Food Hygiene Activities



Who needs to be involved?

Stakeholder engagement and partnership working

To achieve further reductions in human foodborne disease we recognise the critical importance and value of developing effective working partnerships with a range of stakeholders and groups outside the FSA. We will need their support and co-operation, both to develop the Strategy and then to implement actions that are agreed as appropriate and effective. We will need to engage and develop effective good working partnerships with a range of key stakeholder groups, particularly the UK's food industries, for example:

- We will need food producers and processors to adopt improved practices to reduce or prevent the contamination of foods at source and minimise spread or growth of pathogens during production, storage and transportation;
- We will need food retailers to use the significant influence they can exert on the food supply chain to achieve a positive effect on the quality and standards of products that they purchase and provide to consumers, such as through specifying quality standards or implementing appropriate financial incentives;
- We will need caterers and consumers to become more aware of the importance of their role in ensuring that the food they prepare and serve is safe, and to make sure that they adhere to good food hygiene practices every time they prepare food.

An example of this partnership approach is the Government-Industry Joint Working Group on *Campylobacter*. This was established in mid-2009 to facilitate effective dialogue about the industry's role in reducing *Campylobacter* in raw chicken, including the feasibility and practicality of any potential interventions. In December 2009, the FSA's Chief Executive, Tim Smith, wrote to the Chief Executives of the 7 major UK retailers to seek their help and support in tackling the problem of *Campylobacter* in chicken and the International Meeting on *Campylobacter* Reduction in Chicken in March 2010 involved extensive participation by producers, retailers and regulators. With Defra and the BBSRC (Biotechnology and Biological Sciences Research Council) we have also developed a coordinated programme of *Campylobacter* research to ensure that future *Campylobacter* research will feed into practical outcomes in the control of *Campylobacter* infection.

We will:

- build productive relationships with these stakeholders and work closely with them to realise a significant and lasting reduction in the amount of foodborne illness that consumers suffer each year;
- work with key stakeholders to develop and implement targeted and evidence-based activities to address the priority organisms;
- evaluate the effectiveness and impact of these actions, both in their specific context as well as on overall levels of foodborne illness and the burden that this places on consumers and on the economy;

- develop clear performance indicators that will help us to know whether we have made a difference.

To facilitate this, we will develop an Engagement Strategy for FDS. This will set out our approach to partnership working, what we will aim to deliver, the timescales, and set realistic but stretching targets.

We will expect to work closely with a range of partners, which would include:

- Industry bodies that represent relevant parts of the food production, processing, distribution and retail sectors, as well as individual businesses, where appropriate;
- Our counterparts in other countries (Europe and beyond) that share our objective to reduce foodborne illness, to explore interventions found to have been effective;
- The Health Protection Agency, Health Protection Scotland and Public Health Agency in Northern Ireland, for data to monitor progress and expert advice on disease epidemiology;
- Local authorities, port health authorities and other bodies responsible for enforcement of food hygiene legislation and delivery of 'official controls'.
- The scientific community, to explore priority needs to extend or improve the evidence base, and who is best placed to progress these needs;
- Consumers, to ensure that approaches and implementation plans will not meet significant opposition from the majority of groups or individuals.

FDS 2010-15: A pathogen specific approach

Priorities

The FDS that covered the periods 2000-05 and 2005-10 largely used commodity-specific approaches, combined with an active Food Hygiene Campaign, to attempt to reduce foodborne disease rates. This approach was successful to a degree, with a 19.2% reduction being recorded in the 2000-05 cycle, but similar gains were not seen in the 2005-10 cycle.

Although the FSA will continue to support commodity-specific measures to improve the safety of different foodstuffs across the food chain, it is now felt to be appropriate to take a more targeted approach to reducing the levels of specific foodborne pathogens to deliver the greatest public health gains. Our food chain analysis project⁷ has identified the key pathogens where tailored risk management

⁷ <http://www.food.gov.uk/safereating/foodchain/>

programmes can be used to focus effort and identify appropriate intervention points to produce a decrease in contamination levels and disease rates.

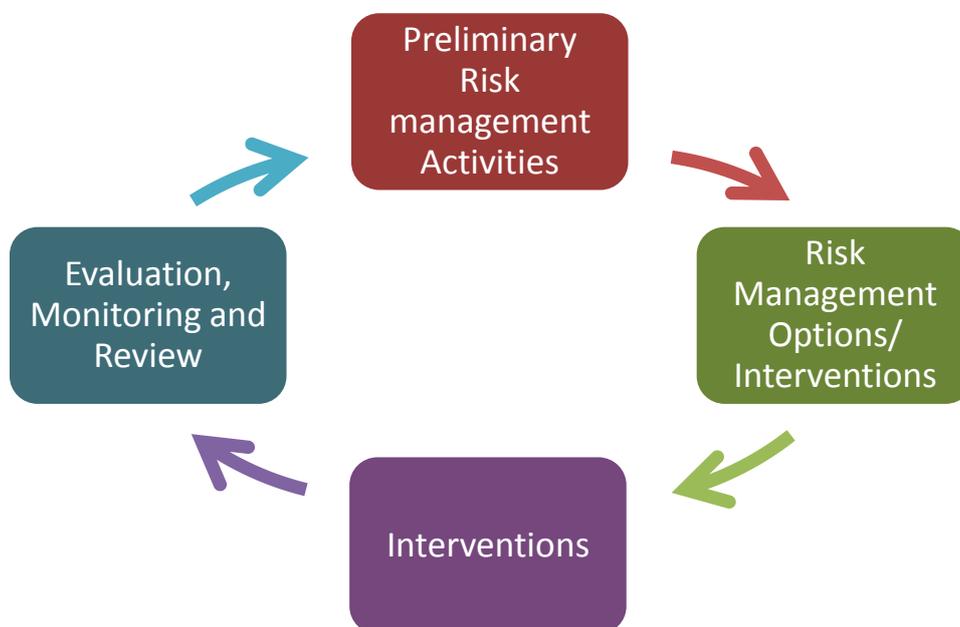
The priority pathogens identified for action are *Campylobacter*, which causes the largest number of cases each year, and *Listeria monocytogenes*, which is responsible for the largest number of deaths.

Although these pathogens are identified as our main priorities, the FSA will not ignore other important pathogens that cause foodborne illness in the UK, such as *Salmonella* or *E. coli* O157. These remain important but it should be remembered that the FDS is not the only mechanism through which the FSA will work to improve control of these pathogens, as illustrated in the table below. The FDS will maintain awareness of the incidence of other pathogens and close links with these other activities and their success and, if appropriate, reassess the need for further action in relation to other pathogens as a part of the FDS.

Risk management programmes

We intend to develop specific risk management programmes (as outlined below) for both *Campylobacter* and *Listeria monocytogenes* as key strands of the FDS.

Development of FDS Risk management Programmes Working in partnership with Stakeholders



Our data indicates these organisms cause the largest number of cases and deaths, respectively, due to foodborne illness. The rationale for choosing these pathogens to focus on is outlined on pages 14-17.

Key foodborne disease pathogens – priorities for FDS action

	Priority for FSA Action	How these priorities are being addressed
<i>Campylobacter</i>	HIGHEST Greatest burden of foodborne disease due to very high case numbers and severity of disease	Foodborne Disease Strategy – new <i>Campylobacter</i> Risk Management Programme
<i>Listeria monocytogenes</i>	High Burden of disease second to <i>Campylobacter</i> - although infection is rare it is very severe.	Foodborne Disease Strategy – new <i>Listeria</i> Risk Management programme, to address: Consumer behaviours/actions; Procurement/provision of food to the vulnerable; Industry compliance/enforcement
<i>E. coli</i> O157	High Infection is rare in comparison to <i>Campylobacter</i> but disease can be severe for affected individuals	FSA Food Hygiene Delivery Programme ⁸ developed specifically to implement recommendations from the Inquiry into the South Wales <i>E. coli</i> O157 outbreak. Supported by FDS research programme
<i>Salmonella</i>	High Although case numbers continue to decrease <i>Salmonella</i> still causes many cases and outbreaks	Implementation of National Control Programmes designed to reduce <i>Salmonella</i> levels in food animal species ⁹ - led by Defra with FSA support
Norovirus	High Burden of disease is moderate as it causes a significant number of cases but infection is generally mild.	Foodborne Disease Strategy – new Norovirus Research Programme to provide improved evidence and understanding as basis for possible future action
<i>Clostridium perfringens</i>	Low Burden is low and foodborne disease syndrome is mild	Foodborne Disease Strategy – Food Hygiene Campaign and Programmes designed to assist catering businesses to implement food hygiene legislation (such as Safer Food Better Business and Scores On The Doors)

⁸ <http://www.food.gov.uk/multimedia/pdfs/board/fsa091203.pdf>

⁹ <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/zoonoses/ncp.htm>

ISSUES - *Campylobacter*

Causes the largest number of cases of foodborne illness in the UK

- 55,000 laboratory confirmed cases in the UK in 2008
- Estimated 321,000 cases in England and Wales alone in 2008

Our efforts since 2001 have not achieved a sustained reduction in human campylobacteriosis

- Case numbers have gradually risen since 2004
- Further increases in reported cases for 2009 and 2010

Efforts to reduce campylobacteriosis will focus on the reduction of *Campylobacter* in chicken

- 60-80% of cases can be attributed to chicken
- Our most recent survey suggests that 65% of chickens at retail sale in the UK are contaminated with *Campylobacter*

ACTION - *Campylobacter* Risk management programme

In 2010 we will:

- Develop and agree a realistic and evidence based target for the reduction of *Campylobacter* in chicken at retail sale
- Develop and implement a stakeholder engagement strategy to facilitate the development and achievement of this target
- Take forward a coordinated programme of research with other funders to identify and develop effective interventions to control *Campylobacter*

Between 2011-2015 we will

- Utilise our engagement with stakeholders and outputs from research to implement interventions designed to reduce *Campylobacter* levels to our target figure
- Continue to work to improve public awareness and use of messages about good food hygiene practice at home and in catering establishments to reduce levels of campylobacteriosis in the human population

ISSUES - *Listeria monocytogenes*

Causes more deaths each year than *Salmonella* and *E. coli* O157 combined

- Although relatively rare, human cases of listeriosis can cause severe illness and invariably require hospitalisation for treatment
- A third of cases are thought to result in death

The number of cases in 2009 was almost double what it had been in 2000

- Most of this increase has occurred among people over 60
- Disease also linked to immuno-suppressive treatments and underlying medical conditions, including cancers

The cause of this increase is not clear

- Thought to be linked to storage and handling practices in the home, especially of chilled ready-to-eat foods
- The susceptibility of particular individuals or groups to infection is also thought to be key

ACTION - *Listeria* Risk Management Programme

Effective control of *Listeria* in the food chain

- Ensure that the risk of listeriosis is taken into consideration as part of procurement, distribution and food safety management processes in settings in which vulnerable people are cared for.
- Develop tools to aid assessment of risk and, where necessary, commission new research to increase understanding of the risks and drivers of listeriosis.
- Work with industry to improve compliance of high-risk food sectors with legal requirements for *L. monocytogenes* in foods and with enforcers to ensure consistent and effective enforcement of these requirements.

Consumers understand the risk from *Listeria* and know how to minimise it

- Develop appropriate communication strategies and effectively deliver food safety messaging to promote awareness of the risk of listeriosis and behaviours and actions that can help prevent the disease among high risk groups

Other pathogens, other issues

Although specific, focussed and targeted Risk Management Programmes for *Campylobacter* and *Listeria monocytogenes* will form the main strands of the Strategy, the FSA recognises that cases of human foodborne illness also arise from other pathogens and practices in the food chain. These pathogens require different approaches as outlined below.

FDS Specific Research Programmes

E. coli O157

- *E. coli* O157 remains a recognised and important human pathogen and a high priority for FSA action. Although incidence of human infections has fluctuated, there has been no overall trend in incidence (either up or down) since 2000. In comparison to *Campylobacter* and *Salmonella* cases are relatively rare but infections can result in serious conditions that may affect the blood, kidneys or nervous system and can be fatal, particularly in infants, young children and the elderly. It has been the cause of a number of large and serious foodborne outbreaks.
- Following the report of the Public Inquiry into the South Wales *E. coli* O157 outbreak the Agency has established the Food Hygiene Delivery Programme (FHDP) to ensure that the recommendations of the report are acted upon. This will be the primary route through which control of foodborne infections caused by *E. coli* O157 will be addressed. Within the FDS we will continue to monitor rates of infection caused by *E. coli* O157, latest scientific developments and the work of the FHDP. To ensure research recommended by the public inquiry is taken forward an *E. coli* O157 research programme will be included within the FDS.

Foodborne Viruses

- Viruses are an important cause of infectious intestinal disease and a proportion of these cases are due to foodborne transmission. This proportion varies from virus to virus and attribution data is, in many cases severely lacking. For the best studied of these viruses, Norovirus, around 40% of infections are estimated to be foodborne.
- Norovirus is estimated to cause approx 200,000 cases of foodborne disease per year in England and Wales alone. It is frequently associated with outbreaks of disease linked to raw shellfish, such as oysters. For example, between December 2009 and March 2010, 55 incidents were reported to the FSA involving illness associated with raw oyster consumption that were believed to be due to Norovirus. Many cases are also thought to result from the introduction of viruses into food by infected food handlers.
- Although Norovirus is clearly an important foodborne pathogen considerable research is required before an evidence-based Norovirus Risk management Programme can be developed. To facilitate this we will develop a Norovirus research programme within the FDS.

Monitoring or Maintenance

Salmonella

- The incidence of *Salmonella* cases has declined consistently since 2000. A number of National Control Programmes are currently in place for the control of *Salmonella* in eggs and poultry (breeders and layers), with further Programmes to be implemented for broilers, turkeys and slaughter pigs. This work is led by Defra¹⁰ and devolved Agriculture Departments in the UK, although the FSA actively participates in these activities.
- Although this background suggests a controlled situation, *Salmonella* remains an important pathogen that still causes a large number of cases and is responsible for a large number of outbreaks each year. We will continue to monitor the incidence of *Salmonella* cases and outbreaks to ensure that the downward trend in case numbers continues, and take further action if the situation worsens.

Clostridium perfringens

- *Clostridium perfringens* was one of the 5 key pathogens originally chosen by the FSA to monitor levels of foodborne disease in the UK. However, determining the burden of disease caused by *C. perfringens* is particularly problematic as illness is usually mild and self-limiting and under-reporting is a major issue. The number of cases reported each year is very low, and the number of outbreaks reported has declined over the last five years.
- The primary cause of large outbreaks of *C. perfringens* foodborne disease has been poor temperature control and storage of large bulk meat dishes, both in the catering and domestic settings. These issues have been specifically addressed in the catering setting through packages such as Safer Food Better Business, CookSafe and the Safe Catering pack, and through the 4Cs strategy in the domestic context.
- Before determining whether any further action, including research, is required to control or better understand *C. perfringens* food poisoning we will await the findings of the second study of infectious intestinal diseases (IID) due to report in mid-2011. This should allow us to assess if *C. perfringens* is still an important cause of community acquired IID.

¹⁰ <http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/zoonoses/ncp.htm>

Safer food handling and preparation

As a means to address domestic and catering food hygiene practices, the Food Hygiene Campaign will be a valuable adjunct to other pathogen-specific work within the FDS. Food preparation in the home is a vitally important yet highly variable step of the food chain, with different practices, knowledge, facilities and habits in the UK's 26 million households¹¹.

Since 2001, the Food Hygiene Campaign has promoted the simple 4Cs principles of good food hygiene (see graphic below) that, if adhered to, should prevent the majority of cases of domestic foodborne illness. These principles also formed the basis for much of the Safer Food Better Business food safety management pack that was launched in 2005 and since 2007 the FSA has led the UK-wide Food Safety Week initiative to promote these same themes.



During the 2005-10 strategic plan cycle the FSA also took forward a new strategy for improving awareness and application of the 4Cs, concentrating on work with schools and support for local initiatives. The FSA has undertaken considerable work to ensure that the principles of safe food preparation are understood by children and young people through the food competency framework for young people¹². This helps to set out the essential building blocks so that schools and community-based organisations can provide young people with a consistent set of food skills and knowledge. The food competences support wider UK Government work aimed at improving the health of young people and will contribute towards helping schools develop a 'whole school approach' to diet and health. Because they are progressive and cumulative from one age stage to the next, the competences can help young people make healthier choices that benefit them now and in later life.

¹¹ <http://www.statistics.gov.uk/pdfdir/famhh0411.pdf>

¹² <http://www.food.gov.uk/healthiereating/nutrition/schools/competencies/>

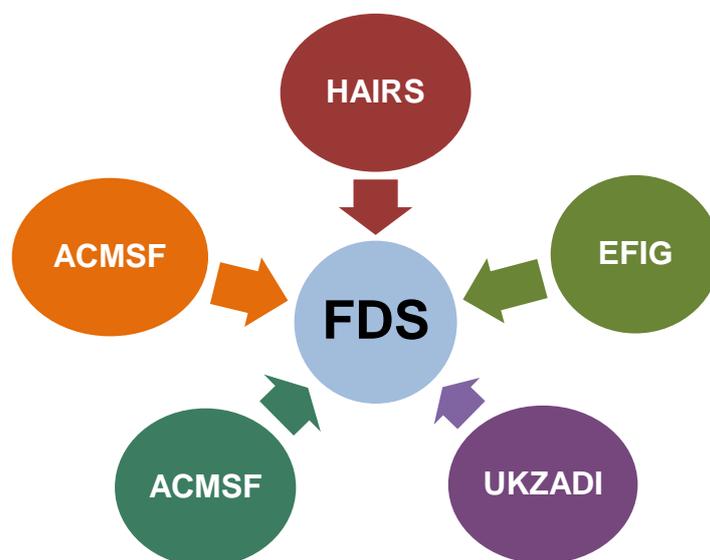
Importantly, the competences apply to all learning experiences, both within and outside the school setting, and can be met at home or through other activities.

In the 2010-2015 Strategic Plan cycle we intend to refresh Food Hygiene Campaign activities to ensure they are appropriate and most likely to achieve long-term behaviour change and contribute to reducing UK foodborne illness. We will continue to co-ordinate the annual Food Safety Week initiative and this and other activities will promote 4Cs messages and, where appropriate, be used to support and publicise the work or outcomes from other FDS Programmes. These activities will also incorporate findings from social and behavioural research, commissioned by ourselves and others, that help us to achieve lasting behaviour changes that result in safe food preparation practices for food prepared and served within and outside of the home.

Horizon scanning

In addition to the specific bacterial foodborne pathogens that the Strategy will focus on, the FDS will maintain awareness of developing issues that relate to the incidence and control of UK foodborne illness. Such issues might include the increased significance of, or risk from, other pathogens (bacterial or viral) or the emergence of new zoonoses. Issues of this type that could impact on the incidence of UK foodborne illness, or the Strategy's activities will be assessed and if judged to be of sufficient significance, will be incorporated into the Strategy. Outlined below are the key groups¹³ - across and beyond Government - that will feed into the FDS to ensure that horizon scanning is both efficient and effective.

Horizon scanning – Cross Governmental Groups and Expert Committees that will feed into the FDS



¹³ ACMSF = Advisory Committee on the Microbiological Safety of Food;
DARC = Defra Antimicrobial Resistance Coordination group;
HAIRS = Human Animal Infections Risk Surveillance group;
EFIG = Epidemiology of Foodborne Infections Group;
UKZADI = UK Zoonoses, Animal Diseases and Infections group;

Monitoring progress

To assess the impact of the FDS we will monitor changes in levels of foodborne disease throughout the period 2010-15.

As the individual programmes within the FDS are developed, they will also define targets and performance indicators designed to allow us to measure their success, and these will be developed as each programme is finalised.

Primary FDS objectives are as follows:

- To develop and implement a Risk Management Programme to reduce *Campylobacter* in chicken. This will include working in partnership with industry, retailers and other stakeholders to review existing evidence and effective interventions available to reduce *Campylobacter* in chicken, and developing a target for the reduction in levels of *Campylobacter* in raw chicken at retail by December 2010, to be achieved by April 2015.
- To develop a Risk Management Programme by July 2011 to reduce listeriosis by 2015, that will include partnership working across government departments, public health agencies, non-governmental organisations, the NHS local authorities and the food industry.
- To refresh Food Hygiene Campaign activities to support Strategy objectives by the end of 2010, improve domestic food safety culture (awareness and behaviour) and achieve long-term behaviour change by consumers.
- To identify, map and analyse the Strategy's stakeholders and then pro-actively engage with key stakeholders to assist achievement of the Strategy vision and objectives.
- To carry out research into *E. coli* O157 and foodborne viruses, to provide a sound evidence base upon which risks and actions can be assessed and Strategy activity can be planned and implemented, as required.

Monitoring foodborne disease

The FSA makes use of two main sets of data to monitor changes in levels of foodborne disease that quantify it, and the burden associated with it, in different ways: laboratory confirmed cases of foodborne illness and estimated cases of foodborne illness.

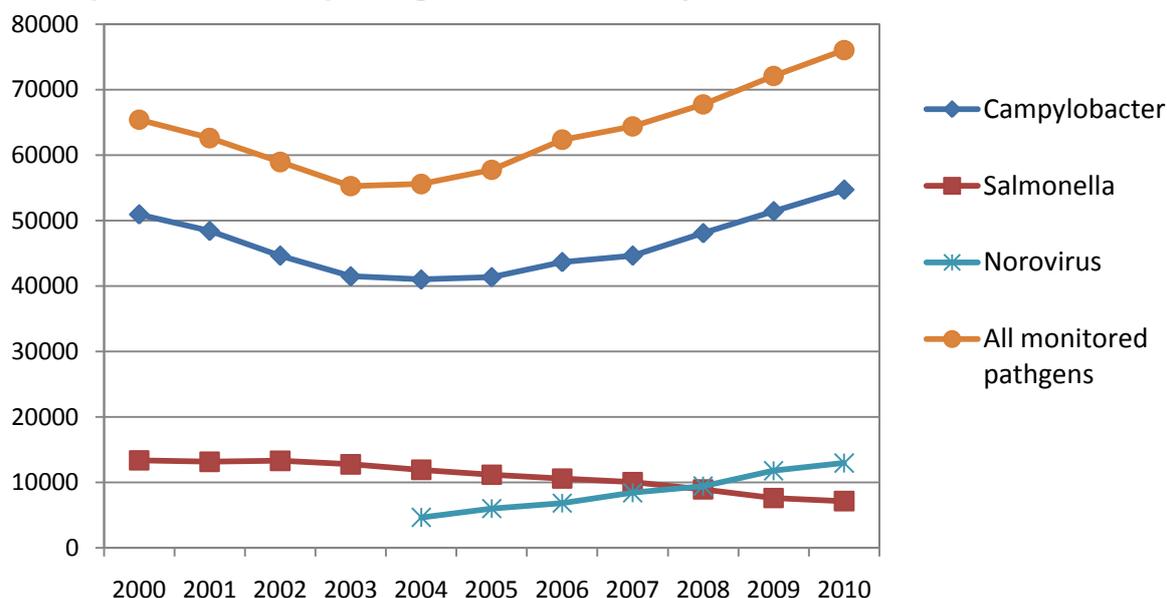
Laboratory confirmed cases of foodborne illness

The FSA considers that the number of laboratory-confirmed and reported cases of illness caused by pathogenic organisms that are commonly associated with food poisoning is the most robust way to monitor trends in foodborne disease over time. These confirmed cases are reported as a result of a stool sample provided by people suffering food poisoning symptoms and sent to laboratories by a family doctor (GP) or other clinician.

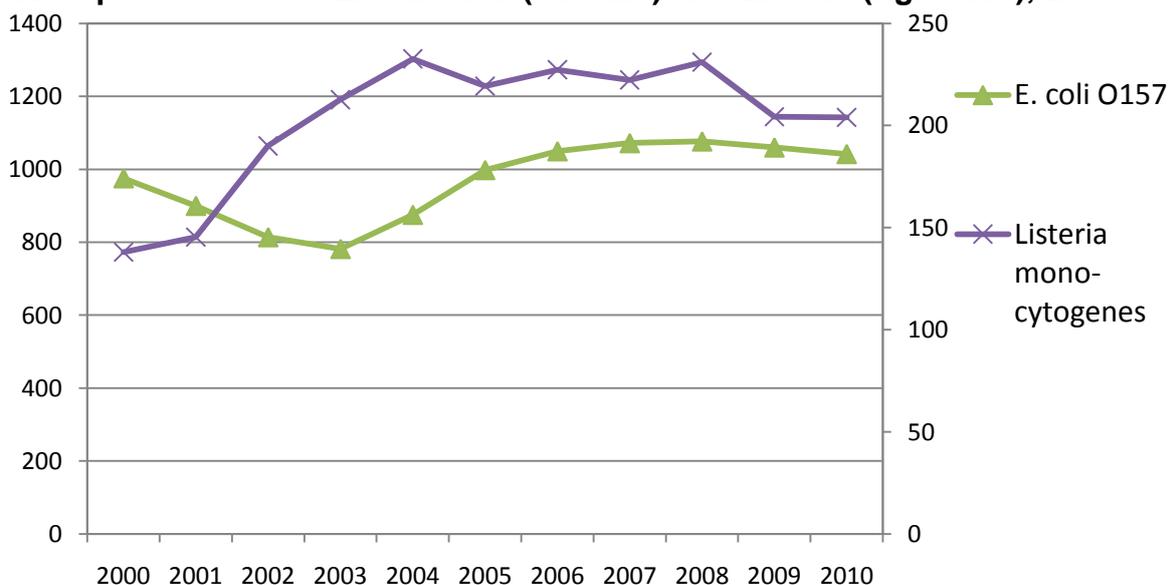
Laboratories report positive findings to the bodies that co-ordinate the national surveillance system in each UK country: Health Protection Agency (collects data for England and Wales), Public Health Agency in Northern Ireland and Health Protection Scotland.

Changes in foodborne disease have been monitored by reported laboratory confirmed cases of major bacterial pathogens associated with it (*Salmonella*, *Campylobacter*, *E. coli* O157, *Listeria monocytogenes*) since 2000, plus Norovirus, as illustrated in the two graphs below (presented separately due to large differences in numbers).

UK-acquired cases of pathogens monitored by FSA: UK 2000-10



UK-acquired cases of *E. coli* O157 (left axis) and *Listeria* (right axis), 2000-10

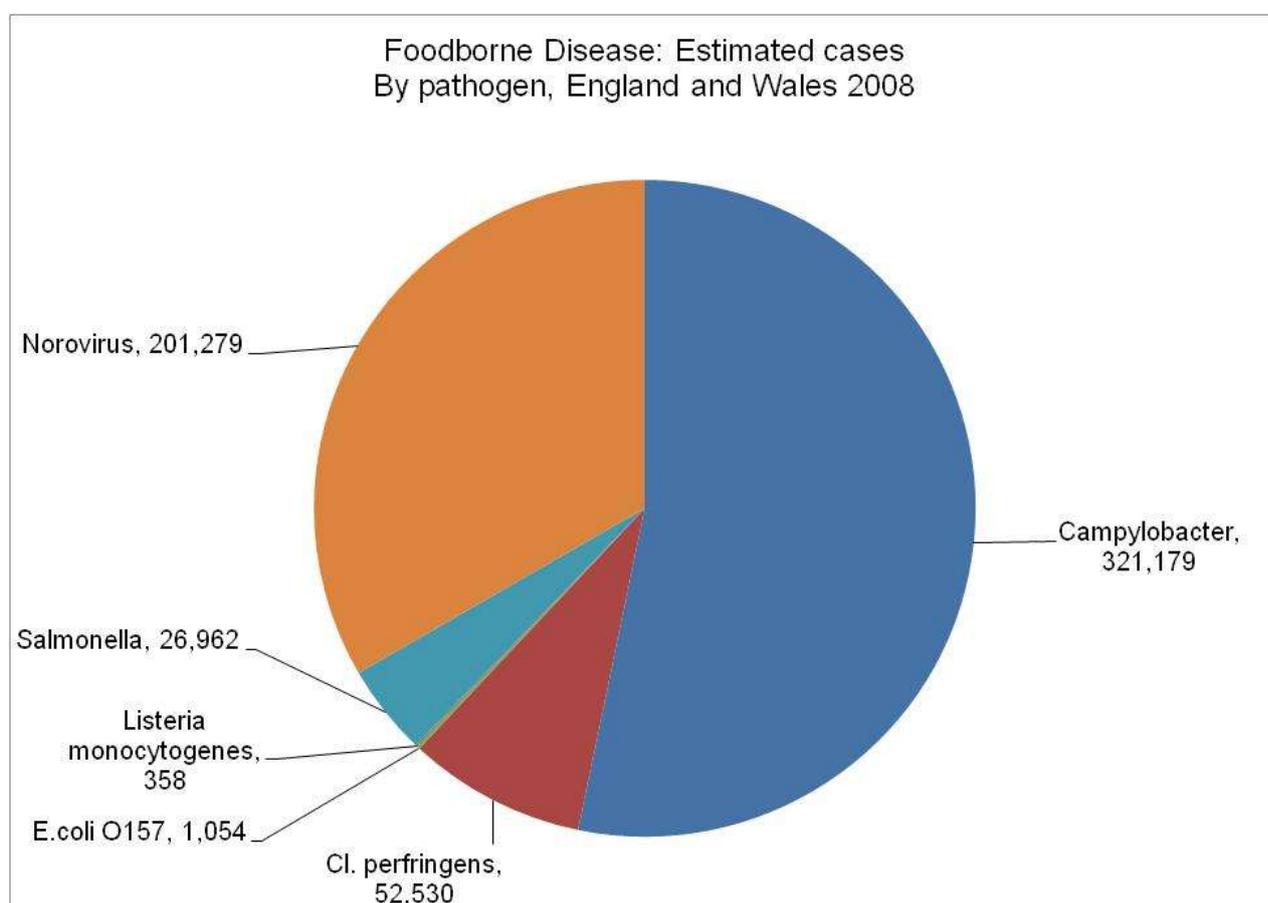


Estimated cases of foodborne illness

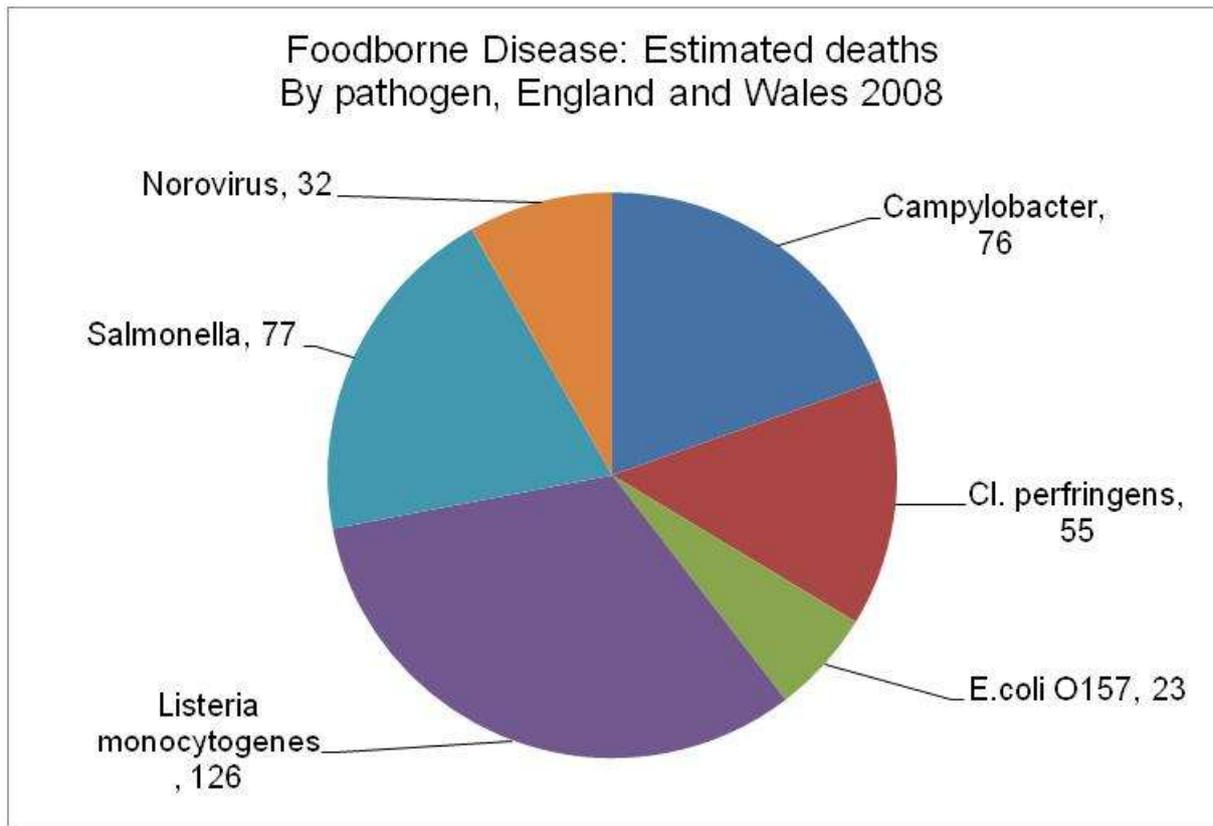
The number of reported laboratory confirmed cases of foodborne illness is known to be lower than the actual numbers that occur due to under-reporting of cases. This may vary between only one in 3 to one in 100 cases being reported, but this proportion is consistent for each pathogen.

To take account of this, and provide a measure of the severity of disease caused, the HPA calculate annual estimates of the actual number of cases of food poisoning that occur in the community in England and Wales. This calculation is based on the number of laboratory-confirmed reported cases, adjusted to take account of the under-reporting of cases which is recognised to occur.

Adjustment for under-reporting relies on data from outbreaks and special studies such as the Study of Infectious Intestinal Disease in England (IID study¹⁴). Differences in estimated cases and deaths for selected pathogens are shown below:



¹⁴ A Report on the Study of Infectious Intestinal Disease in England. The Stationery Office, 2000. ISBN 0 11 322308 0



Monitoring trends, 2010-15

We will continue to monitor trends in UK foodborne disease through the number of reported cases of *Salmonella*, *Campylobacter*, *E. coli* O157 and *Listeria monocytogenes*. Under-reporting is such a significant issue with *Clostridium perfringens* that laboratory confirmed cases of disease do not appear to provide robust trend data therefore we will not continue to include laboratory confirmed cases of *Clostridium perfringens* in our trend monitoring.

We will also continue to monitor trends in the burden of foodborne disease through the annual number of estimated cases, hospitalisations and deaths in the community of foodborne illness and their associated economic costs.

We will take account of the findings of the Second Study of Infectious Intestinal Disease (IID2 study) which, unlike the first IID study, has been conducted across the UK. This study is due to report its findings in mid-2011 and is likely to lead to a change in the basis upon which such estimates are calculated. As it has been conducted across the whole of the UK it should allow calculation of estimates of foodborne disease for England and the whole of the UK. We will also review whether we should include monitoring of the number of cases of any other pathogens in our estimation of foodborne disease in the light of the results of the findings of the IID2 study.

In conclusion

The Foodborne Disease Strategy for 2010-2015 outlines the FSA's approach to reducing foodborne disease for the next five years. It highlights:

- the range of programmes within the FSA that impact on reducing foodborne disease and how these interact with the FDS
- that a pathogen-specific rather than commodities focussed approach to tackling foodborne disease will be taken
- the priority organisms we believe we need to tackle to effect the greatest public health benefit and the approaches we will take for each
- the importance of a renewed Food Hygiene Campaign to support and augment pathogen-specific programmes of work
- the importance of horizon scanning and monitoring activities to ensure that any resurgence or emergence of organisms that cause foodborne disease is captured at an early stage
- the primary objectives of the FDS and how we intend to monitor levels of foodborne disease over the next 5 years