Justification for the drivers in: **Table 2. The main hypothesised drivers for changes in *Campylobacter*.**

Below are the hypothesised contributing factor and their estimated likelihood of causing: 1. Long term change; 2. Seasonal spring increase; 3. Increase in adults over 50 years old; 4. More rural than urban cases; 5. More cases in the more affluent, in *Campylobacter* cases. The scoring as Low, Medium or High is on the basis of published literature and rational examination of the evidence base.

Table 2. The main hypothesised drivers for changes in *Campylobacter*.

Hypothesised contributing factor	Estimated likelihood of causing:				
	Long term change	Seasonal spring increase	Increase in adults over 50 years old	More rural than urban cases	More cases in the more affluent
Surveillance ascertainment					
Impacts of NHS Direct	Medium	Low	Low	Low	Low
National reporting	Medium	Low	Low	Low	Low
Changes in the surveillance system	Low	Low	Low	Low	Medium
Changes in *Campylobacter* culture media	Medium	Low	Low	Low	Low
Laboratory testing policy	Medium	Low	Low	Low	Low
New laws requiring laboratory notification of *Campylobacter* *	Low	Low	Low	Low	Low
Susceptibility					
Increased proton pump inhibitor use	**High**	Low	**High**	Low	Low
Immunity through prior exposure or infection	Low	Low	Low	Low	Medium
Exposure					
Increased contamination of chicken	**High**	Medium	Low	Low	Low
Increased consumption of chicken	Medium	Low	Low	Low	Medium
Increased systemic *Campylobacter* infection in chicken	**High**	Medium	Low	Low	Low
Sourcing chicken from different areas	Medium	Low	Low	Low	Medium
Increase in non-chicken related sources	Low	Low	Low	Medium	Low
Transmission from cattle to chickens by flies	Low	**High**	Low	Low	Low
Transmission from faeces or raw meat to RTE food by flies	Low	**High**	Low	**High**	Low
Biosecurity interventions for *Salmonella* control	Medium	Low	Low	Low	Low
Country walks	Medium	Medium	Medium	**High**	Medium
Contamination from agricultural animals	Medium	Medium	Low	**High**	Medium
Contamination from pets	Low	Medium	Low	Medium	Low
Contamination from wild birds	Low	Medium	Low	Low	Low
Food preparation involving raw meats	Medium	Low	Low	Medium	Low
Educational farm visits	Medium	Medium	Low	Medium	Medium
Barbecued or grilled meat	Medium	**High**	Medium	Low	Low
Private or untreated water supplies	Low	Medium	Low	Medium	Medium
Mains drinking water	Low	Low	Low	Low	Low
Surface water/ sewage exposure	Medium	Medium	Low	Medium	Low
Social factors					
Population aging/demographic change	**High**	Low	**High**	Medium	Low
The economic situation	Medium	Low	Low	Low	Medium
Socioeconomic status	Medium	Low	Low	Medium	**High**
Changes in *Campylobacter* in other countries	Medium	Medium	Low	Low	Low
Kitchen behaviour	Low	Low	Low	Low	Low
GP access	**High**	Low	Low	**High**	**High**
Two weekly waste bin collections	Low	Low	Low	Low	Low
Travel abroad	Medium	Low	**High**	Low	**High**
Eating out	Medium	low	Medium	Low	Medium
Environmental factors					
Temperature	Low	Medium	Low	Low	Low
Rainfall	Low	Low	Low	Low	Low
Latitude/longitude	Low	Medium	Low	Medium	Low

*Human disease notification

The Impact of NHS Direct has been hypothesized to be to prevent a proportion of cases reaching surveillance as a result of a cohort being dealt with through NHS Direct and never having a laboratory examination. It is argued that this could have an impact on long-term reporting in children, but less so in adults (1). Others have argued that the impact of this is likely to be small (2). Because it is a systematic change in surveillance it would be unlikely to show as a seasonal effect. The steady increase in cases in the elderly suggests this effect has not had a substantial impact on reporting in the elderly. There is no evidence that any differential reduction of reporting should more greatly affect urban than rural or affluent than poor.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

National reporting can be influenced by social factors with the bank holidays representing a particular example of a seasonal change that seems to be related to reduced access to primary healthcare services. Changes in national reporting could also have an impact on the number of annual cases reported as a result of local or national changes in the reporting process (anything from physician policy on faecal sample testing, laboratory policy on tests undertaken and completeness of reporting). These changes would be most obvious in influencing long-term changes in local or national reporting than they would in seasonal, adult, rural, or poor populations.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Changes in the surveillance system that have occurred over the period of this study have included better data capture through computer reporting, the impacts of the change from PHLS to HPA, the more standardized data collection that began in 2002, changes in GP access including NHS Direct, the conducting of Sentinel Surveillance, CLASSP and case-control studies, which could have increased case numbers temporarily. There seem to be relatively few impacts of changes in surveillance on these five variables, and although the difference between more affluent and less affluent might be influenced by changes in the surveillance system these do not appear to be large if they occur at all.

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Medium

Changes in *Campylobacter* culture could influence the long term reporting of *Campylobacter.* The period of time between defecation and culture can influence isolation rate as can the antibiotic additives, the gas mixture and any enrichment used. There is little published information on the impact of these methodological factors on isolation, although the use of membrane methods in South Africa suggests that it is possible to routinely isolate a wider range of species using these methods, presumably becausee some strains such as *C. consisus* are more sensitive to the selective antibiotics used in *Campylobacter* isolation media. There is no evidence that this has had a significant impact on the five criteria, but if it had it would be most likely with the long term figures as culture methods have improved over time.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Laboratory testing policy can greatly influence both national reporting and the age distribution of reported cases. The main impact would probably be on the completeness of reporting as measured by cases per year, rather than the other factors. Any changes would be likely to be over a long time period.

1. Long term change	Medium
2. Seasonal spring increase	Low

3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

New laws requiring laboratory notification of *Campylobacter* might be found to have influenced national reporting as a result of voluntary laboratory reporting systems being made mandatory. At present this does not seem to be the case.

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Increased proton pump inhibitor use has been postulated as an important factor in *Campylobacter* infection (3-6). Because the use of such drugs has increased over recent years there is a reasonable indication that the impact of there could have had a big effect on the overall numbers of cases of *Campylobacter* reported through surveillance, and because these are drugs frequently taken by older people then the higher incidence of infection in this group may be linked.

1. Long term change	High
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	High
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Immunity through prior exposure or infection is found in a variety of enteric pathogens. With *Campylobacter* the argument is that some groups are more exposed to *Campylobacter* through chicken (7-9) with repeated infection comes a degree of resistance to symptomatic disease if not infection following exposure. The lower incidence of *Campylobacter* infection in people living in areas of low socioeconomic status could reflect lower exposure, poorer access to healthcare or more infection in childhood conferring resistance to infection as an adult. If community exposure to *Campylobacter* over the years has declined then one could expect more cases in the younger population rather than the observed increase in people over 50 years. In some case-control studies the recent consumption of chicken Is protective, suggesting exposure Is leading to Immunity (10).

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Medium

Increased contamination of chicken might be an explanation for the increased cases over time. Chicken is commonly contaminated with Campylobacter and a significant fraction of human infection is thought to derive from chicken (11-19). There is some evidence that chicken flocks are more contaminated with *Campylobacter* in the summer, although this rise in contamination seems to follow the rise in human disease rather than precede it (20-25). The increase could be in percentage contamination of chicken or the heaviness of contamination. It is not impossible that a mechanism explaining a link between increased contamination of chicken and increases in the elderly or the more affluent might be possible, but is currently thought unlikely. If the seasonal contamination of flocks is caused by flies as has been suggested then this may play a role in both the seasonality of human disease and the increased seasonal contamination of chickens with cattle strains (check references). Cross contamination from chicken to salads and soft fruits (18;26-28) might be seasonal whereas to other ready to eat meals may not be. The types of *Campylobacter* on chicken may also be important in both seasonality and long term changes (29).

1. Long term change	High
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Increased consumption of chicken could potentially be an explanation for a long term increase in human *Campylobacter* infection. However, there does not seem to be clear evidence that chicken consumption in England and Wales has had an

impact on the occurrence of human disease. The seasonality of *Campylobacter* is unlikely to be greatly affected by the seasonality of chicken consumption, although cross contamination of salad items might be expected to be more seasonal. As chicken is the commonest risk factor for *Campylobacter* infection, and it is a cheap food, then differences in socioeconomic status could affect chicken consumption and have an impact on infection, although there is no published evidence for this.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Medium

Increased systemic *Campylobacter* infection in chicken might expose people to infection more commonly if there are foci of infection in muscle and liver for example. The recent rise in outbreaks of *Campylobacter* infection are as a result of undercooking chicken livers. The contamination could be internal or external, but an explanation involving an increase in systemic or hepatic infection causing more livers to be internally contaminated might explain the long term increase in cases in general and the outbreaks in particular.

1. Long term change	High
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Sourcing chicken from different areas might be a possible reason for an increase in *Campylobacter* in the longer term. This could be differences between *Campylobacter* contamination of chickens from different UK producers, but could also be those in other EU states and countries outside of the EU. There is little supporting evidence in this area.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Medium

Increase in non-chicken related sources remains a possibility for the long term increase in human *Campylobacter* infections. This is an area that may be resolved by source attribution. As non-chicken sources are more common in rural areas it will be interesting to see if the chicken related strains increase or decrease over time with interventions in chicken production. This has been observed in New Zealand following interventions to reduce chicken contamination (30-32).

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Medium
5. More cases in the more affluent	Low

Transmission from cattle to chickens by flies remains an important component of the biosecurity aspects of the control of *Campylobacter* in chicken flocks (33;34). As flies are seasonal and their numbers and activity have been hypothesized to coincide with the rise in flock contamination with *Campylobacter* and with human disease (35;36). Transmission from cattle to chicken flocks is more likely to occur in a rural setting, but chicken production is also likely to be rural so this may not have an impact on human disease.

1. Long term change	Low
2. Seasonal spring increase	High
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Transmission from faeces or raw meat to RTE food by flies has been hypothesized as a transmission route that bypasses most of the HACCP food chain protection by the direct transmission of faecal contamination to ready to eat foods (35;36). This could

be expected to have a seasonal impact, and to be more marked in rural than urban areas. One could postulate that the poor might have greater exposure to flies than the rich but there is little evidence that this is the case in the UK. It is assumed that fly populations can change from year to year but are not the main driver for long term changes, or for the increase in adults.

1. Long term change	Low
2. Seasonal spring increase	High
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	High
5. More cases in the more affluent	Low

Biosecurity interventions for *Salmonella* control are an important part of the reductions in infection that have contributed to fewer *S*. Enteritidis infections over recent years (37). If these interventions work for *Salmonella* then it is reasoned that they could also have some impact on *Campylobacter* contamination of chicken flocks. It is possible that the reductions in *Campylobacter* during the early 2000's were associated with increased biosecurity and that the subsequent rise in cases has been as a result of less vigilant subsequent biosecurity because the vaccination is maintaining low *Salmonella* contamination rates in flocks.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Country walks have been hypothesized as a source of exposure to *Campylobacter* becausee contamination of the environment is high. Although the sources of contamination are complicated, the country walk may be only one of a number of transmission routes (38). An increase in country walks could contribute to long term change, particularly in the elderly and more affluent. Walking could also contribute to seasonal changes in infection and is by it's nature more common in rural areas. However, evidence supporting this is not robust and the attributable fraction of people deriving their infections from country walks is probably low.

1. Long term change	Medium
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Medium
4. More rural than urban cases	High
5. More cases in the more affluent	Medium

Contamination from agricultural animals is a likely source for some *Campylobacter* infections because they are such a source of contamination within the agricultural environment (39). Large changes, such as the impacts of the 2001 foot and mouth outbreak, could have contributed to long term changes, and putting agricultural animals out to pasture in the spring may also contribute to direct or indirect exposure of people to *Campylobacter*.

1. Long term change	Medium
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	High
5. More cases in the more affluent	Low

Contamination from pets has long been argued as a source of *Campylobacter* infection (40-45), although the attributable fraction might be small. It is unlikely to have changed substantially over recent years, but supporting evidence for this is not available. It would be reasonable to assume that pets in the country might be more exposed to animal sources of *Campylobacter* contamination than those in urban areas, although the evidence for this is limited.

1. Long term change	Low
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Medium
5. More cases in the more affluent	Low

Contamination from wild birds is a recognized potential source of human infection (46-49). Because many birds are migratory it is possible that human exposure to their faeces will change through the year and be a driver for disease (50;51). The burden of disease attributed to bird sources seems however to be low. The commonest likely exposure route would be direct contact with contaminated bird faeces in the garden, contamination of field grown fruit and vegetables and contamination of source waters for irrigation. Bird-pecked milk in bottles can cause Campylobacter infection (52;52;53) and the source is probably cow faeces. Bird pecked milk related infections appear to be seasonal in distribution with a marked increase in May (54).

1. Long term change	Low
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Food preparation involving raw meats can change over time and could have an impact on human *Campylobacter* infections. Preparing raw meats is an important risk factor for human disease and social and economic changes that influence meat preparation could affect disease. For example in a period of economic decline, such as we have experienced over the last four years, people may eat out less and prepare meals at home more. People in the countryside may have a different exposure to raw meats than those in urban areas.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Medium
5. More cases in the more affluent	Low

Educational farm visits can be a source of outbreaks with a variety of gastrointestinal infections. *Campylobacter* strains from cattle have been linked to strains from human infections (55;56). Cattle and sheep represent a significant reservoir of *Campylobacter* (57;58), and the occurrence of milk-borne outbreaks (13;59-65) suggests that other routes may occur. There is evidence that faecal shedding by sheep is more frequent around lambing (66). The perceived increase in attendances at farms over recent years could contribute to long term changes, is likely to be seasonal, may be more frequent in the more affluent and more likely in rural areas. However, outbreaks of *Campylobacter* linked to farm visits are infrequent compared to *Cryptosporidium* and VTEC so the attributable fraction of cases related to farm visits may be small. An outbreak of *Campylobacter* in workers on a Pheasant farm shows that farm workers can acquire infections directly (67).

1. Long term change	Medium
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Medium
5. More cases in the more affluent	Medium

Barbecued or grilled meat represent a source of exposure to *Campylobacter* that is known to be seasonal (3;68-75). If barbecuing is increasing then this could influence a long term increase in cases as well as the increase in older people, although there is no evidence for this. There is no evidence that barbecues are more of a risk to urban than rural or affluent than poor people.

1. Long term change	Medium
2. Seasonal spring increase	High
3. Increase in adults over 50 years old	Medium
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Private or untreated water supplies can result in outbreaks of *Campylobacter* which is the commonest pathogen causing such outbreaks (76;77). Outbreaks linked to private water supplies may show some seasonality, and will be more common in rural than urban areas. There could be differences in wealth between people on private water supplies but it seems unlikely that this could explain the excess of cases in the affluent, the increase in adults over 50 years old or the long term trend.

1. Long term change	Low
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low

4. More rural than urban cases	Medium
5. More cases in the more affluent	Medium

Mains drinking water has been involved in outbreaks of *Campylobacter* (78-88), and these are more common in countries where chlorination is not universal (89) or where chlorination has failed (90). There is no evidence that *Campylobacter* transmission through drinking water is common in England and Wales or is likely to have had a significant impact on the five parameters.

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Surface water/sewage exposure through contamination of recreational water (91-94), including inland and coastal bathing and water-sports may be seasonal. Exposure can be influenced by changes in water quality or behavior, and may change over years. Exposure is more likely in rural areas but is unlikely to be greatly influenced by affluence.

1. Long term change	Medium
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Medium
5. More cases in the more affluent	Low

Population aging/demographic change is a good candidate for explaining the long term change in *Campylobacter* cases, and may similarly partly explain the increase in cases in the elderly. It is possible that movement of older people out of urban areas could be an explanation for some of the excess of cases in rural areas. However, the population effects are unlikely to have an impact on seasonality, although the age structure might (95).

1. Long term change	High
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	High
4. More rural than urban cases	Medium
5. More cases in the more affluent	Low

The economic situation has changed people's behavior and this may contribute to long term changes in *Campylobacter* infection. Measurements of these behavioral changes (e.g. change in eating arrangements) might contribute to long term changes in infection rates and could alter the rates between affluent and poor.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Medium

Socioeconomic status itself may explain the excess of cases in people living in more affluent areas, although ethnic origin, exposure to different foods (96) and other factors may contribute to this.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Medium
5. More cases in the more affluent	High

Changes in *Campylobacter* in other countries that resemble those seen in England and Wales are assumed to show some more fundamental relationship that affects all countries. For example the seasonality (more cases in summer months) can be seen in most European countries but the rise and fall in cases has a different timing in different countries, suggesting an indirect relationship to weather (97). Similarly changes in the long term rates of infection that move in a similar way across different countries might be assumed to reflect common drivers or mechanisms across these countries.

1. Long term change	Medium
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Kitchen behaviour might be assumed to be common across most adults, over longer term periods, over different seasonal, in rural and urban areas and across the social spectrum. Whether this is the case is unclear, but there is little evidence that these factors influence the changes in disease over the five criteria.

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

GP access is likely to be poorer in some social groups than others, and is probably variable geographically. This is unlikely to be an explanation for seasonality or the increase in people over 50 years, but could contribute to differences in urban/rural and socioeconomic status but may also have contributed to some of the changes over the longer term.

1. Long term change	High
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	High
5. More cases in the more affluent	High

Two weekly waste bin collections have been considered as potentially increasing the risks of food-borne diseases to people locally because food waste may decompose and flies may arise. Because there has been a recent trend to collecting household waste on a two weekly rather than weekly basis along with recycling parts of the rubbish it is plausible that there could have been a change in *Campylobacter* associated with this. However, there is no evidence for this having any effect on *Campylobacter* infections.

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Travel abroad is an important risk factor for many enteric infections (98;99) and for *Campylobacter* (100-102), including military service (100;103) and probably represents a significant percentage of all cases of travellers diarrhoea (104-107). In some countries more than 50% of *Campylobacter* cases may be linked to foreign travel (108). In England and Wales about a fifth of *Campylobacter* cases are thought to follow travel abroad. The seasonality of infections can be specific for individual countries (109). Travel is more common in the more affluent and is increasingly common in the elderly, possibly contributing to the rise in cases in this group. Although travel is seasonal and contributes to the overall seasonality of *Campylobacter* it does not explain the late spring increase. Travel is probably not a significant cause of the differences seen between urban and rural populations.

1. Long term change	Medium
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	High
4. More rural than urban cases	Low
5. More cases in the more affluent	High

Eating out is an activity that can change our exposure to *Campylobacter*, either for the better or worse. Changes in the extent to which people eat out could contribute to longer term changes in exposure to *Campylobacter* and might be influenced by socioeconomic status and age.

1. Long term change	Medium
2. Seasonal spring increase	Low

3. Increase in adults over 50 years old	Medium
4. More rural than urban cases	Low
5. More cases in the more affluent	Medium

Temperature is known to have some association with *Campylobacter* and this is thought to be indirect (95;97). While it might explain some of the seasonality it is unlikely to be the only factor causing it. Temperature appears to have little explanatory value on relation to the other key factors.

1. Long term change	Low
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Rainfall does not correlate well with *Campylobacter*, but could be involved in outbreaks linked to private water supplies. It does not appear to have a significant impact on any of the factors.

1. Long term change	Low
2. Seasonal spring increase	Low
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Low
5. More cases in the more affluent	Low

Latitude/longitude show some effect in relation to the spring rise in *Campylobacter* cases which increase earlier in more Western and Northern areas, and part of this may be down to more rural populations living in these areas.

1. Long term change	Low
2. Seasonal spring increase	Medium
3. Increase in adults over 50 years old	Low
4. More rural than urban cases	Medium
5. More cases in the more affluent	Low

Interpretation of what the paper shows

Based on the inferences drawn up in Table 2 the biggest influences on long term change appear to be chicken contamination, proton pump inhibitor use, demographics and access to a GP. For seasonal changes the flies and barbecued food seem to be the most likely drivers. For the long term increase in the percentage of *Campylobacter* cases in people 50 years, proton pump inhibitor use, demographics and travel seem to be the most important factors driving the change. In explaining the differences between urban and rural cases possible important factors are flies, walking in the countryside, contact with animals and GP access, although the generally older population in less urban areas may also contribute. The difference in rates of infection between deprived and non-deprived groups seems to relate to socioeconomic status and income, to access to health services and probably also to greater exposure to *Campylobacter* through travel.

Chicken remains an important source of infection, although the change in case numbers in this report does not seem to correlate to chicken consumption.

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