

## ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

## DISCUSSION PAPER

FOODBORNE OUTBREAKS OF *CAMPYLOBACTER* ASSOCIATED WITH CONSUMPTION OF CHICKEN LIVER PÂTÉ/PARFAIT**Background**

1. *Campylobacter* is the most commonly reported bacterial cause of food poisoning in the UK. The majority of reported cases are sporadic and general outbreaks associated with this bacterium have tended to be infrequent in the UK. However, during 2009 and the first half of 2010, there has been an apparent increase in the number of *Campylobacter* general outbreaks, almost all being associated with consumption of chicken liver pâté/parfait type products. HPA published an article on 'Foodborne outbreaks of *Campylobacter* (associated with poultry liver dishes) in England' in their HPR in December 2009 <sup>[1]</sup>. A paper has also subsequently been published<sup>[2]</sup>
2. *Campylobacter* cases in England and Wales have increased over the period 2004 to 2009 by 29% and the increase continues in 2010 with 12% more cases to week 26 compared to the same period in 2009.
3. Chicken is a key source of this pathogen and research has shown that *Campylobacter* as well as other pathogens can be present on the outside and the inside of poultry liver, resulting in contamination of the end product if inadequately cooked <sup>[3] [4]</sup>.

**Issue - outbreaks from 2005- 2010 in England and Wales**

4. Data on general outbreaks of *Campylobacter* in England and Wales reported during 2005-2009 are provided in Table 1 and details of cases in outbreaks of *Campylobacter* associated with poultry liver/pâté in England and Wales reported during 2005-2009 are provided in Table 2. There is evidence in a number of the outbreaks during 2009 that the livers used to make the pâté/parfait were not fully cooked (e.g. that the livers were seared or sealed but allowed to remain pink in the centre).
5. Data provided by the HPA indicate the number of outbreaks of *Campylobacter* associated with chicken liver products increased substantially in 2009; of the 15 outbreaks reported in the last five years, nine (60%) occurred during 2009. The majority of the outbreaks between 2005 and 2010 associated with pâté/parfait products have been at restaurants/hotels (10/15 or 67%) and have involved pâté/parfait prepared 'on site' as opposed to purchased 'ready-made'.
6. An additional five outbreaks associated with consumption of chicken liver pâté or parfait have been reported up to week 28 of 2010.

**Table 1. Number of general outbreaks of *Campylobacter* reported in England and Wales, 2005 to 2009**

Year	Number of <i>Campylobacter</i> outbreaks		
	All outbreaks	Outbreaks of foodborne transmission	Outbreaks linked to consumption of poultry liver pate/parfait
2005	8	7	2
2006	0	0	0
2007	3	3	1
2008	7	4	3
2009	17	14	9
<b>Total</b>	<b>35</b>	<b>26</b>	<b>15</b>

Source: HPA eFOSS <sup>[5]</sup>

**Table 2. Details of cases in outbreaks of *Campylobacter* associated with poultry liver/pâté in England and Wales, 2005 to 2009**

Year	Outbreaks linked to consumption of poultry liver pate/parfait	Details of <i>Campylobacter</i> cases		
		Total number affected	No. hospitalised	No. deaths
2005	2	4	0	0
		40	0	0
2006	0	-	-	-
2007	1	37	0	0
2008	3	3	0	0
		3	0	0
2009	9	29	0	0
		2	0	0
		3	0	0
		5	0	0
		5	1	0
		8	1	0
		10	1	0
		12	1	0
26	0	0		
<b>Total</b>	<b>15</b>	<b>354</b>	<b>4</b>	<b>0</b>
		<b>[range 2-167]</b>		

Source: HPA eFOSS <sup>[5]</sup>

### **Outbreaks reported in Scotland**

7. There have been two outbreaks of *Campylobacter* reported in Scotland in recent years, one in 2005 and one in 2009.
8. The outbreak in 2005 occurred following a dinner dance event in Montrose, Scotland, in November 2005. Of the 165 attendees 86 reported symptoms of gastroenteritis and 32 of the stool samples were positive for *Campylobacter*.

Analysis carried out in the resulting case control study suggested that the chicken liver pâté represented the most significant exposure risk; all confirmed cases had eaten pâté. Pâté preparation was reported to involve 'deliberate undercooking by flash frying followed by mechanical homogenisation' [6].

9. In the 2009 outbreak, five cases of illness were associated with consumption of chicken liver pâté at a restaurant, of which three were confirmed as positive for *Campylobacter* from stool samples submitted. The pâté was purchased by the restaurant pre-made by a company in Belgium. Details provided by the company in Belgium and Belgian Authorities suggest that the chicken livers were cooked to 100°C before being added to the pâté, which was then itself pasteurised.

### **Northern Ireland**

10. The FSA is not aware of any recent outbreaks of *Campylobacter* associated with chicken liver products in Northern Ireland at this time.

### **Current situation**

11. In July 2010 the FSA issued updated advice to caterers on the safe handling and cooking of livers [7]. The article published on the Agency's website included advice that livers should be cooked thoroughly all the way through, to a core temperature of 70°C for 2 minutes or equivalent.

### **ACMSF action:**

12. The FSA would like to ask ACMSF members for their opinion on why this increase in outbreaks associated with chicken liver products has been observed. In particular it would be useful for members to consider:
  - (i) Whether the increase in outbreaks linked to chicken liver products could be linked to the overall increase in *Campylobacter* cases.
  - (ii) Have there been changes in sourcing, preparation practices or consumption of these types of product in the catering industry?
  - (iii) Is there any evidence of changing practices in poultry production that might have influenced the type, level or frequency of contamination of poultry livers with *Campylobacter*?
13. Do members feel that more information is needed in order to fully answer the points above? If so, consideration could be given to returning to this issue at a future meeting.

**Secretariat  
September 2010**

## References

1. HPA Health Protection Report Volume 3 No 49; 11 December 2009 Foodborne *Campylobacter* outbreaks associated with chicken liver dishes in England <http://www.hpa.org.uk/hpr/archives/2009/news4909.htm#campclp>
2. Little, C.L., Gormley, F.J., Rawal, N., Richardson, J. (2010). A recipe for disaster: Outbreaks of campylobacteriosis associated with poultry liver pâté in England and Wales. *Epidemiology & Infection*. Available online doi: doi:10.1017/S0950268810001974
3. Barot, M.S., Mosenthal, A.C. and Bokkenheuser, V.D. (1983). Location of *Campylobacter jejuni* in infected chicken livers. *J Clin Microbiol*; **17** (5): 921–922
4. Whyte, R., Hudson, J.A. and Graham, C. (2006). *Campylobacter* in chicken livers and their destruction by pan frying. *Lett Appl Microbiol*; **43** (6): 591-5
5. HPA eFOSS - electronic Foodborne and non-Foodborne Gastrointestinal Outbreak Surveillance System.
6. Forbes, K.J., Gormley, F.J., Dallas, J.F., Labovitiadi, O., MacRae, M., Owen, R.J., Richardson, J., Strachan, N.J.C., Cowden, J.M., Ogden, I.D. and McGuigan, C.C. (2009). *Campylobacter* immunity and coinfection following a large outbreak in a farming community. *J Clin Microbiol*; **47** (1): 111-116.
7. FSA web story 'Caterers warned on chicken livers' <http://www.food.gov.uk/news/newsarchive/2010/jul/livers>