

INFORMATION PAPER

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD (ACMSF)

Epidemiology of Foodborne Infections Group (EFIG) : progress report and data on human and animal surveillance

Introduction

1. The Epidemiology of Foodborne Infections Group met on 27 November 2002. The minutes of the meeting have not yet been finalised. This paper provides an overview of the group's discussions.

Human data

2. Data for the first three quarters of the year was reviewed. The main features were:
 - *Campylobacter* appeared to have reached a plateau over the last three years (since 1998)
 - *Salmonella* had increased slightly in England and Wales, but continued to fall in Scotland and Northern Ireland. This increase was mainly due to an increase in non-PT4 *Salmonella enteritidis*, particularly PT1. PT4 continued to decrease in all UK countries (and now accounted for less than 50% of all the *Salmonella enteritidis* isolates) as did *Salmonella typhimurium*.
 - *E. coli* O157 was running at 88% of the levels seen in 2000. It was reduced in England and Wales but slightly increased in Scotland and Northern Ireland.
3. Provisional data for the full year on all the target pathogens being monitored in the context of the foodborne disease strategy has now been collected and is appended at A. It has not yet been discussed by EFIG.

Animal data

4. The Foot and Mouth Disease epidemic had a major effect on submissions to VLA during 2001. These decreased by 26%, mainly due to a 35% decrease in submissions from animals susceptible to FMD. However, there was also a drop of 9% in submissions from poultry. All the trends have to be viewed against this background.
5. Of most note was the continuing decline in *Salmonella typhimurium*, particularly in sheep and cattle (although this might be an artefact of FMD). There was no decrease in the number of isolates from chickens and turkeys. Most of this decline was due to a continuing decrease in DT104.
6. Poultry samples had been screened for *Salmonella enteritidis* PT 5c in the wake of the outbreaks of this phage type in Scotland, but no positive isolates had been found. Of poultry isolates of *Salmonella enteritidis*, 50% were PT4 and 50% PT6. PT6 has also increased in humans.
7. Veterinary Investigating Officers had investigated 1 outbreak of *S. enteritidis* in a breeding flock and 4 outbreaks in laying flocks. With the apparent decrease in *S. enteritidis* in laying flocks, attempts are increasingly being made to trace back egg-related outbreaks in humans to source.

Post-FMD restocking

8. Guidance on post-FMD restocking has been drawn up for the farming community and regional meetings are planned with the aim of increasing farmers' awareness of the importance of good biosecurity. Good documentation (and limiting the number) of animal movements is seen as crucially important, and this links in with increased requirements for animal traceability and proposals for risk-based meat inspection.
9. Discussion suggested that current livestock surveillance systems might not pick up the emergence of new *Salmonella* phage types. The Group supported the need for enhanced surveillance during this period and was informed that it had already been agreed that this would happen.
10. In Scotland, the possibility of commissioning research to exploit the opportunities of post-FMD restocking had been raised by the *E. coli* O157 Task Force. A consortium of researchers was invited to put forward proposals. These focussed almost exclusively on *E. coli* O157, with a small project on *Mycobacterium avium* subsp. *paratuberculosis*. In the end, because of its limited scope and small size, and in the light of the

programme of VTEC research that DEFRA had already agreed to commission, it was decided that the proposal should not be funded.

11. Proposals were also being put forward for a joint VLA/PHLS assessment of the impact on human IID. The data to form the basis for this assessment have already been or are being collected.

***E.coli* O157**

Farm studies

12. Giles Paiba, from VLA, presented data from studies of farms linked epidemiologically to human cases of VTEC. The majority of incidents occur between April and September and most are investigated within 21 days. In past investigations, on positive farms, about 10% of cattle have been found to shed O157 and the current work confirms this figure. PT2 has been isolated fairly consistently throughout the investigation period (1994-2000), with PT 21/28 becoming apparent in 1999/2000. In all three incidents this year associated with open farms, matching VTEC has been isolated on the farm.

Trends in phage types

13. The change in phage types in animals mirrors that seen in humans with a striking decrease in PT2 and a rise in PT 21/28 across GB. PT8 has also increased and is now the second most common phage type. In the Republic of Ireland, PT32 is predominant but, although there was an increase in isolates of this phage-type from England & Wales in 1999/2000, the numbers were small. All outbreaks this year have involved PT21/28 or PT2. Both of these characteristically produce VT 2, and this seems to be associated with more severe disease than those producing VT1 or both VT1 and VT2.
14. PFGE of the common phage types shows considerable heterogeneity (particularly in PT 21/28).
15. The factors favouring an increased prevalence of a phage type are not clear. There seems to be considerable geographical variation in predominant types. Whilst PT 21/28 is found in Continental Europe, it is fairly uncommon.

Campylobacter

16. Sarah O'Brien reported on the *Campylobacter*, *Helicobacter* and Related Organisms meeting – most of the issues mentioned were discussed at the ACMSF *Campylobacter* workshop.

17. Data on resistance in *Campylobacter* in the abattoir surveys was discussed. There were low levels of antimicrobial resistance in cattle and sheep isolates, but a greater proportion of pig isolates were resistant, including multiply-resistant organisms. *C. coli* isolates were more resistant than *C. jejuni* isolates. 10% of *C. coli* from pigs is ciprofloxacin resistant. Although the incidence of resistance appears slightly lower than in some countries (such as Denmark), this may be an artefact of the breakpoint used rather than a true difference.

18. In the PHLS sentinel surveillance, just over 50% of isolates are resistant to one or more antimicrobials. The *C. jejuni* data set has been stratified on the basis of travel abroad. Those travelling abroad are twice as likely to have a ciprofloxacin resistant strain as those staying at home. Cases with a home-acquired ciprofloxacin strain appear to be positively associated with cold cooked meats and consumption of mains water (analysis still underway). In those travelling abroad, ciprofloxacin resistance is associated with poultry and bottled water consumption. Similar analysis of the *C. coli* data set has not yet been carried out but levels of antimicrobial resistance are generally higher in *C. coli*.

Outbreak summaries

19. The summary of red meat outbreaks is now in press. A draft paper on outbreaks related to salads, fruit and vegetables was circulated to members of the group.

Judith Hilton
March 2002

Annex A Laboratory reports : comparison between 2000 and 2001

All cases

Final figures for 2000 (updated February 2002)

	UK	England & Wales	Scotland	N.Ireland
<i>Salmonella</i>	16,989	14,844	1,720	425
<i>Campylobacter</i>	63,370	55,887	6,482	1,001
<i>E. coli</i> O157	1,147	896	197	54
<i>Clostridium perf.</i>	181	139	32	10
<i>Listeria</i>	113	100	9	4
Total	81,800	71,866	8,440	1,494

Provisional figures for the year 2001

	UK	England & Wales	Scotland	N.Ireland
<i>Salmonella</i>	18,402	16,465	1,571	366
<i>Campylobacter</i>	62,747	56,420	5,435	892
<i>E. coli</i> O157	1,049	768	227	54
<i>Clostridium perf.</i>	160	93	56	11
<i>Listeria</i>	153	136	12	5
Total	82,511	73,882	7,301	1,328