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BACK ISSUES

***Salmonella kedougou* in mushrooms**

Following routine testing of catering and wholesale mushrooms, *Salmonella kedougou* was isolated from a number of samples of raw mushrooms. The isolates were sent to the Laboratory of Enteric Pathogens (LEP) for confirmation and the majority were found to be *S. kedougou* phage type (PT) 5, although some are untypable with the *S. kedougou* typing phages. In view of this, as a protective measure the Food Standards Agency has reminded all consumers that it is best to wash and peel all mushrooms before eating them. Additionally, the Agency suggests that mushrooms for use in salads may be cooked rather than eaten raw (1).

The extent of the problem is not yet known, but initially it has been found in mushrooms from some, but not all, growers in Northern Ireland. Preliminary findings indicate that the most likely source may be the casing, a layer of organic material added on top of the compost to promote mushroom fruiting. The Food Standards Agency has requested mushroom growers and suppliers of compost and casings that are potentially implicated in this incident not to sell their products until the problem has been resolved. The Agency is co-ordinating further investigations in the United Kingdom (UK) with the Mushroom Growers' Industry, and suppliers of the medium used to grow the mushrooms, in order to establish the source and extent of the problem (1). The Food Safety Authority of Ireland is coordinating the investigation in the Republic of Ireland and is working closely with the Food Standards Agency (2).

Although *S. kedougou* is a type of *Salmonella* that is generally associated with poultry (3), it is currently an uncommon cause of illness in humans. LEP has only reported five cases in the UK this year. One of the reported cases is infected with *S. kedougou* PT5 and is known to consume mushrooms. One further case from Northern Ireland is infected with a strain of *S. kedougou* that is untypable with the *S. kedougou* typing phages. These cases are under further investigation.

On 30 March 2001 an enquiry concerning recent human isolates of *S. kedougou* was sent to participants in Enter-net, the EU wide network for the surveillance of human salmonella and Vero-cytotoxigenic *Escherichia coli* infections. There have been no recent isolates of *S. kedougou* in Austria, Denmark, Norway, Poland, Spain, or Sweden. A single isolate in late 2000 was reported from Finland. Isolates of *S. kedougou* have not increased recently in France although there has been three isolates (including two in infants) in 2001. Australia and Canada also reported that they have had no recent isolates of *S. kedougou*. Subsequently, the 12 April 2001 press release by the Food Standards Agency summarising the action on salmonella in mushrooms being taken within the UK was circulated within Enter-net.

Laboratories should urgently refer all suspect isolates of *S. kedougou* (antigenic structure O: 13,23: H=i: l,w) to LEP.

1. Food Standards Agency. Food Standards Agency acts on salmonella in mushrooms. In: *Food Standards Agency website* [online] Food Standard Agency Press Release, 12 April 2001. [cited 19 April 2001] Available from: www.foodstandards.gov.uk/press_releases/statements/st010412.htm

2. Food Safety Authority of Ireland. Food Safety Authority of Ireland advises consumers to cook mushrooms. In: *Food Safety Authority of Ireland website* [online] Food Safety Authority of Ireland Press Release, 12 April 2001. [cited 19 April 2001] Available from: www.fsai.ie/news_index.htm

3. Veterinary Laboratories Agency. *Salmonella in Livestock production 1999*. Weybridge: Veterinary Laboratories Agency, 1999.

Tuberculosis outbreak in a Leicester school - update

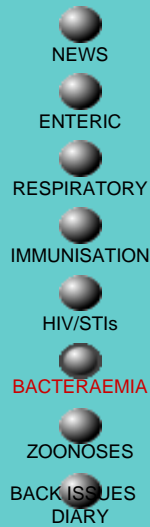
A further 19 cases of tuberculosis have been identified in students in the outbreak from a school in Leicester (1,2). All nineteen students attended the same school: one was identified before Easter, and the remaining 18 were among approximately 550 students whose screening was completed after Easter. A total of 50 cases have been associated with this outbreak: 44 students, two teachers, and four family contacts. In addition, a further 40 students were identified with strongly positive tuberculin skin test results but without evidence of active disease. This brings the number of students receiving chemoprophylaxis to approximately 100. Staff at the school have all been offered chest x-ray screening. Apart from the two non-infectious cases in staff previously diagnosed, no new cases in staff

have been identified. Contacts of all the cases in the outbreak are being screened. Investigations continue, under the direction of Leicestershire Health Authority, to identify the probable source of the outbreak.

[1. CDSC. Tuberculosis outbreak at a community college in Leicester. *Commun Dis Rep CDR Wkly* \[serial online\] 2001 \[cited 6 April 2001\]; **11** \(14\): news.](#)

[2. CDSC. Tuberculosis in a school in Leicester – update. *Commun Dis Rep CDR Wkly* \[serial online\] 2001 \[cited 12 April 2001\]; **11** \(15\): news.](#)

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***Klebsiella* spp, *Enterobacter* spp, *Citrobacter* spp, and *Serratia* spp bacteraemia, England and Wales: 1999 and 2000**

This second enhanced bacteraemia report which cover reports received at PHLS Communicable Disease Surveillance Centre (CDSC) in the calendar years 1999 and 2000 concentrates on the *Enterobacteriaceae* which are mainly hospital-associated: specifically *Klebsiella* spp, *Enterobacter* spp, *Serratia* spp, and *Citrobacter* spp. All what follows must be interpreted cautiously because reporting may be affected by factors including variable practices of testing and speciation as well as reporting completeness. With the growing interest in antimicrobial susceptibility, differences and changes in completeness of reports with antimicrobial sensitivity are especially likely at present.

In 2000 there were 5640 bacteraemia reports for these genera, an increase of 2% on 1999. This compares to 10,261 *Escherichia coli* (1) and 11,162 *Staphylococcus aureus* (2) bacteraemia reports in 2000. Of the *Enterobacteriaceae* being reviewed, *Klebsiella* spp bacteraemias were the most commonly reported, accounting for between 51% and 53% of the total in 1999 and 2000 respectively, followed by *Enterobacter* spp (31% and 30%), *Serratia* spp (10%) and *Citrobacter* spp (8% and 7%).

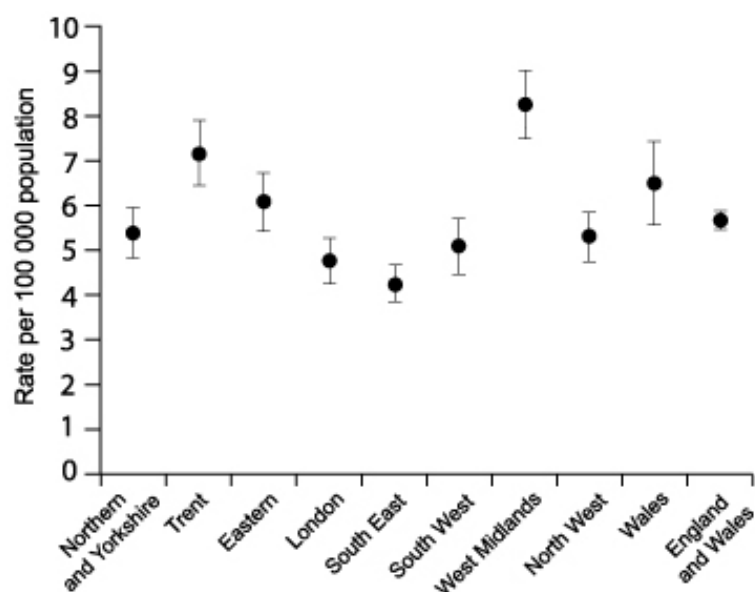
***Klebsiella* spp**

There were 2989 *Klebsiella* spp bacteraemias reported in 2000, an increase of 6% on 1999 (table 1). Increased numbers of reports were received from West Midlands, Trent, Eastern, and South East regions. These reports included those reported as *Kl. pneumoniae* (64%, and includes those previously termed *Kl. aerogenes*), *Kl. oxytoca* (21%), other unnamed (13%), and named (2%) *Klebsiella* spp. As a consequence the overall annual rate of *Klebsiella* spp bacteraemia reported for England and Wales was 5.67/100,000, a small increase on 1999 (5.35/100,000). This compares to a rate of 19.5/100,000 for *E. coli* (1). The regional reporting rate for *Klebsiella* spp bacteraemias ranged from 4.3/100,000 in South East region to 8.25/100,000 in West Midlands in 2000 (figure 1).

Table 1 *Klebsiella*, *Enterobacter*, *Serratia*, and *Citrobacter* spp bacteraemia laboratory reports, England and Wales: 1999 and 2000

	1999	2000
<i>Klebsiella</i> spp		
Northern and Yorkshire	356	341
Trent	308	369
Eastern	268	329
London	369	347
South East	322	371
South West	269	251
West Midlands	369	440
North West	352	350
Wales	205	191
Total for England and Wales	2818	2989
<i>Enterobacter</i> spp		
Northern and Yorkshire	187	178
Trent	171	195
Eastern	162	157
London	249	201
South East	186	203
South West	160	175
West Midlands	232	224
North West	230	202
Wales	143	149
Total for England and Wales	1720	1684
<i>Serratia</i> spp		
Northern and Yorkshire	78	99
Trent	47	45
Eastern	32	42
London	58	54
South East	55	48
South West	61	49
West Midlands	74	72
North West	78	60
Wales	92	99
Total for England and Wales	575	568
<i>Citrobacter</i> spp		
Northern and Yorkshire	41	23
Trent	44	54
Eastern	52	50
London	46	57
South East	54	49
South West	45	36
West Midlands	56	62
North West	53	38
Wales	32	30
Total for England and Wales	423	399

Figure 1 Rates of reported cases of *Klebsiella* spp bacteraemia (95% confidence intervals) per 100, 000 population, England and Wales: 2000



Reporting of antimicrobial susceptibility

Overall, between 54% and 59% of *Klebsiella* spp bacteraemia reports had information on the organisms' susceptibilities to gentamicin and ciprofloxacin respectively in both years combined (table 2). However, there was considerable variation between health regions from 33% to 94% in 2000. For ciprofloxacin, the inter-regional range was from 32% to 89%. There were noticeable increases in 2000 compared to 1999 in completeness of reporting of gentamicin and ciprofloxacin susceptibilities in Wales, South East, Eastern, and West Midlands regions.

Table 2 Gentamicin, ciprofloxacin, ceftazidime, imipenem susceptibility data in *Klebsiella*, *Enterobacter*, *Serratia*, and *Citrobacter* spp bacteraemia laboratory reports, England and Wales: 2000*

	Resistant (%)	Sensitive (%)	No information (%)	Total
<i>Klebsiella</i> spp				
Gentamicin	90 (3)	1680 (56)	1219 (41)	2989
Ciprofloxacin	160 (5)	1533 (31)	1296 (43)	2989
Ceftazidime	103 (3)	1118 (37)	1768 (59)	2989
Imipenem	3 (-)	720 (24)	2266 (76)	2989
<i>Enterobacter</i> spp				
Gentamicin	63 (4)	955 (57)	666 (40)	1684
Ciprofloxacin	129 (8)	833 (49)	722 (43)	1684
Ceftazidime	204 (12)	513 (30)	967 (57)	1684
Imipenem	9 (1)	461 (27)	1214 (72)	1684
<i>Serratia</i> spp				
Gentamicin	14 (2)	331 (58)	223 (39)	568
Ciprofloxacin	97 (17)	236 (42)	235 (41)	568
Ceftazidime	19 (3)	236 (42)	313 (55)	568
Imipenem	2 (-)	180 (32)	386 (68)	568
<i>Citrobacter</i> spp				
Gentamicin	11 (3)	250 (63)	138 (35)	399
Ciprofloxacin	24 (6)	219 (55)	156 (39)	399
Ceftazidime	40 (10)	145 (36)	214 (54)	399
Imipenem	2 (1)	103 (26)	294 (74)	399

* percentages are in brackets

Reported antimicrobial resistance to gentamicin and ciprofloxacin

Of the bacteraemia reports that included information on susceptibility, the prevalence of gentamicin resistance was 5%, compared with 3.5% in 1999. Ten per cent and 7.7% showed ciprofloxacin resistance in 2000 and 1999 respectively (table 3). Regionally the prevalence ranged from 0.6% in Northern and Yorkshire region to 8.7% in North West in 1999 and from 0% in Wales to 16% in London in 2000. For ciprofloxacin resistance, the range was from 4.1% in Trent region to 13% in London in 1999 and from 3.4% in Trent to 21% in London in 2000. All these prevalences must be treated circumspectly because of the specimens for which susceptibility data were not reported

Table 3 Susceptibility of *Klebsiella*, *Enterobacter*, *Serratia*, and *Citrobacter* spp in bacteraemias to gentamicin and ciprofloxacin, England and Wales: 1999 and 2000

	Gentamicin		Ciprofloxacin	
	1999	2000	1999	2000
<i>Klebsiella</i> sp				
England and Wales overall resistance %	3.5	5.0	7.7	9.5
Lowest proportion resistant % (region)	0.6 (N&Y)	– (Wales)	4.1 (Trent)	3.4 (Trent)
Highest proportion resistant % (region)	8.7 (NW)	16 (London)	13 (London)	21 (London)
<i>Enterobacter</i> sp				
England and Wales overall resistance %	5.5	6.2	10	13
Lowest proportion resistant % (region)	2.9 (Trent)	1.3 (Trent)	4.8 (SE)	5.5 (SW)
Highest proportion resistant % (region)	12 (London)	12 (London)	19 (NW)	22 (NW)
<i>Serratia</i> sp				
England and Wales overall resistance %	2.6	4.1	22	29
Lowest proportion resistant % (region)	– (SE, SW, WM, Trent)	– (NY, WM, Trent)	3.4 (Eastern)	8.1 (SE)
Highest proportion resistant % (region)	6.5 (Eastern)	15 (London)	44 (Wales)	55 (Wales)
<i>Citrobacter</i> sp				
England and Wales overall resistance %	5.0	4.0	5.8	9.9
Lowest proportion resistant % (region)	– (SE, N&Y, Wales, WM, Trent)	– (SE, N&Y, Wales, WM, Trent)	– (Wales)	– (Trent)
Highest proportion resistant % (region)	15 (Eastern)	21 (London)	17 (WM)	29 (London)

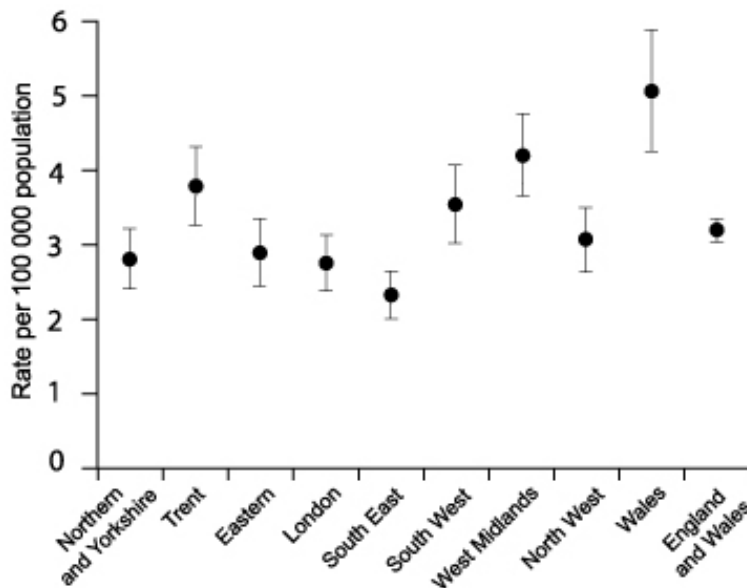
SE= South East; SW= South West; N&Y= Northern and Yorkshire; NW= North West; WM= West Midlands

***Enterobacter* spp**

In 2000 there were 1684 *Enterobacter* spp bacteraemias reported. This compared with 1720 in 1999, a fall of 2% (table 1). The majority of bacteraemia reports for *Enterobacter* spp concerned *Ent. cloacae*

(64%), *Ent. aerogenes* (11%), other unnamed (15%), and named *Enterobacter* spp. As a consequence of there being little change in the number of reports, the annual rate of reported *Enterobacter* spp bacteraemia for England and Wales was very similar in both years: 3.26/100,000 in 1999 and 3.20/100,000 in 2000 (figure 2). The interregional range varied from 2.3/100,000 in South East region to 5.1/100,000 in Wales in 2000. Numbers of reports increased from Trent, South East, South West, and Wales regions.

Figure 2 Rates of reported cases of *Enterobacter* spp bacteraemia (95% confidence intervals) per 100,000 population, England and Wales: 2000



Reporting of antimicrobial susceptibility

Overall, between 56% and 60% of reports had information on the susceptibility to gentamicin and ciprofloxacin in the period reviewed (table 2). As for other species, the variation was considerable between regions. In 1999 this ranged from 31% to 87% of *Enterobacter* spp bacteraemias having gentamicin susceptibility information and 37% to 89% in 2000. The proportions of *Enterobacter* spp bacteraemias with ciprofloxacin susceptibility information ranged from 30% to 83% in 1999 and 35% to 88% in 2000. Within these ranges there were improvements in 2000 in gentamicin and ciprofloxacin susceptibility reporting from Wales, West Midlands, Eastern, London, and South West regions.

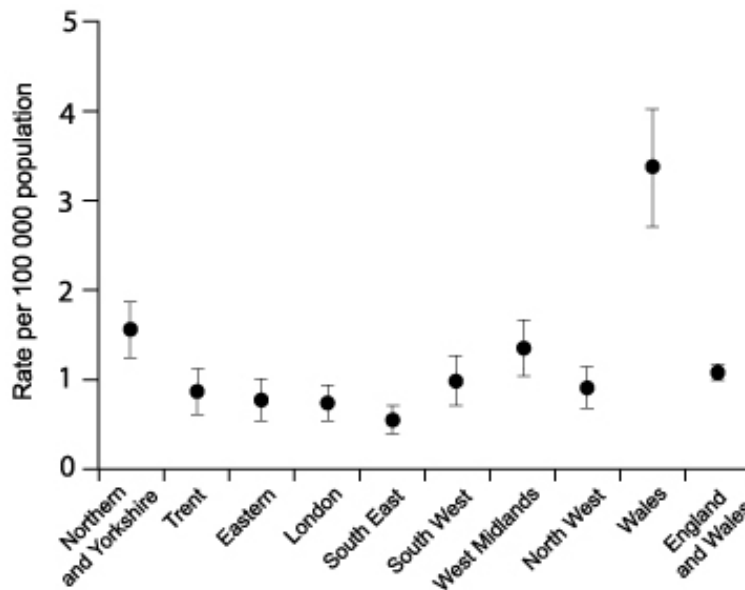
Reported antimicrobial resistance to gentamicin and ciprofloxacin

Of bacteraemia reports for *Enterobacter* spp that did include susceptibility information, 5.5% and 6.2% were gentamicin-resistant and 11% and 13.4% were ciprofloxacin resistant in 1999 and 2000 respectively (table 3). For gentamicin resistance, these prevalences ranged from 2.9% in Trent region to 12% in London in 1999 and from 1.3% in Trent to 12% in London in 2000. For ciprofloxacin resistance, the range was from 4.8% in South East region to 19% in the North West in 1999 and from 5.5% in South West to 22% in North West in 2000. As before, these prevalences must be treated circumspectly because of the specimens for which susceptibility data were not reported

***Serratia* spp**

The total number of bacteraemia reports for *Serratia* spp was similar in both years: 575 in 1999 and 568 in 2000 (table 1). There were increased numbers of reports from Northern and Yorkshire and Eastern regions in 2000 compared to 1999. About two thirds of *Serratia* spp bacteraemia reports in 1999 and 2000 were accounted for by *S. marcescens*, followed by *S. liquefaciens* (16%), other unnamed (16%), and named *Serratia* spp. A substantial number of reports in both years came from Wales region (92 in 1999 and 99 in 2000) and the fewest from Eastern (32 in 1999 and 42 in 2000). The high numbers reported from Wales region were surprising and it results in a rate of reported bacteraemias for these species that is higher than for England and Wales as a whole (figure 3). The cause of this difference is now being investigated.

Figure 3 Rates of reported cases of *Serratia* spp bacteraemia (95% confidence intervals) per 100,000 population, England and Wales: 2000



Reporting of antimicrobial susceptibility

Overall, between 59% and 61% of reports had information on the isolate's susceptibility to gentamicin and ciprofloxacin (table 2). As with the other enterobacteria reviewed here, the variation within regions was much greater: 28% to 97% in 1999 had information on gentamicin susceptibility and 33% to 90% in 2000. Susceptibility reporting was especially complete from Eastern region but there were also improvements in the data from Wales, West Midlands, London, and South East regions.

Reported antimicrobial resistance to gentamicin and ciprofloxacin

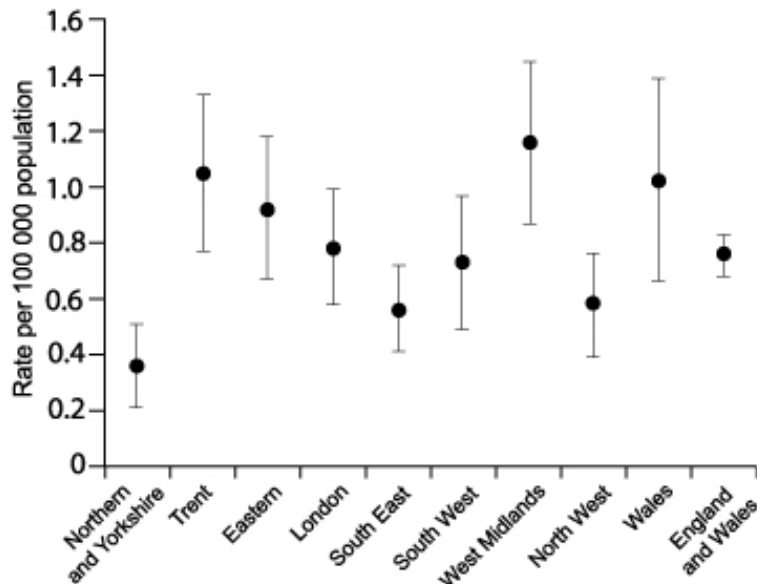
When susceptibility data were reported for *Serratia* spp, 2.6% and 4.1% of the isolates reported were gentamicin-resistant and 22% and 29% were ciprofloxacin-resistant in 1999 and 2000 respectively (table 3). Gentamicin resistance ranged from 0% in the South East, South West, Trent and West Midlands regions to 6.5% in Eastern in 1999 and from 0% in Trent, Northern and Yorkshire, and West Midlands regions to 15% in London in 2000. Reported ciprofloxacin resistance ranged from 3.4% in Eastern region to 44% in Wales in 1999 and from 8.1% in South East to 55% in Wales in 2000. The next highest prevalences of reported ciprofloxacin resistance were 33% in North West region in 1999 and 38% in Trent in 2000.

***Citrobacter* spp**

There were 399 reports for bacteraemias due to *Citrobacter* spp in 2000, compared to 423 in 1999: a decline of 5.7% (table 1). Bacteraemia reports for *Citrobacter* spp in 1999 and 2000 included those due to *Citrobacter freundii* (56%), *C. koseri* (*diversus*) (23%), other unnamed (19%), and named *Citrobacter* spp.

The rates of annual reports for *Citrobacter* spp bacteraemias were 0.8/100,000 in both years (figure 4). This ranged from 0.62/100,000 in South East region to 1.1/100,000 in Wales in 1999 and from 0.36/100,000 in Northern and Yorkshire to 1.2/100,000 in West Midlands in 2000.

Figure 4 Rates of reported cases of *Citrobacter* spp bacteraemia reporting rates (95% confidence intervals) per 100,000 population, England and Wales: 2000



Reporting of antimicrobial susceptibility

Overall, between 57% and 65% of reports had information on the susceptibility to gentamicin and ciprofloxacin in 1999 and 2000 (table 2). Again this variation between the regions was considerable, ranging from 33% to 92% in 1999 and from 43% to 90% in 2000. Notable improvements in susceptibility reporting were seen in the data from South East, West Midlands, Wales, Trent, and London regions.

Reported antimicrobial resistance to gentamicin and ciprofloxacin

Where susceptibility information was given, 5% and 4% of *Citrobacter* spp were gentamicin-resistant and 6% and 10% were ciprofloxacin resistant in 1999 and 2000 respectively (table 3). In the case of gentamicin, resistance ranged from 0% in South East, Northern and Yorkshire, Trent, Wales, and West Midlands regions in both 1999 and 2000 to 15% in Eastern in 1999 and 21% in London in 2000. Reported ciprofloxacin resistance ranged from 0% in Northern and Yorkshire, the South East, and Wales regions in 1999 and 0% in Northern and Yorkshire and Trent in 2000 (over 50% of reports without susceptibility information) to 17% in West Midlands in 1999 and 29% in London in 2000.

Susceptibility to other antimicrobials

The bacteraemia reports of *Enterobacteriaceae* were also examined for information on susceptibility to antimicrobials such as the third-generation cephalosporins, carbapenems, and piperacillin-tazobactam. Information on the susceptibility of these organisms to ceftazidime and imipenem was reported less frequently than to gentamicin and ciprofloxacin (table 2) and these data should therefore be treated especially cautiously. Ceftazidime susceptibility being given in between 37% and 46% of reports, whilst imipenem susceptibility data featured in 24% to 35% of reports over these two years (this compares to between 56% and 65% of reports having information on gentamicin and ciprofloxacin susceptibility). The proportion of reports in which these susceptibilities were reported was very similar in both years. Susceptibility test results were not reported for meropenem or piperacillin-tazobactam in 1999 or for piperacillin-tazobactam in 2000, but a small number of reports (under 4%) had information on meropenem susceptibility in 2000.

Of the reports where ceftazidime susceptibility was given, 5.6%, 28%, and 5.3% of those for *Klebsiella*, *Enterobacter*, and *Serratia* spp respectively indicated ceftazidime resistance in 1999. These proportions remained similar in 2000: 8.4%, 29%, and 7.5%, respectively. The high rates of resistance in *Enterobacter* spp are likely to be due to the hyperproduction of AmpC beta-lactamases. As *Cit. freundii* and *Cit. diversus* vary greatly in their susceptibility to cephalosporins, ceftazidime susceptibility was assessed according to these species where the original report indicated that the organism was either *Cit. freundii* or *Cit. diversus*. As expected, *Cit. freundii* accounted for 36 of the 37 reports in 1999 indicating ceftazidime resistance and 19 out of the 20 in 2000.

For bacteraemia reports where imipenem susceptibility was given, 0.6%, 1.8%, 1.5%, and 2.6% of reports for *Klebsiella*, *Enterobacter*, *Serratia* and *Citrobacter* spp indicated imipenem resistance respectively in 1999. Figures for 2000 were similar: 0.4%, 1.9%, 1.1%, and 1.9% indicated imipenem resistance in *Klebsiella*, *Enterobacter*, *Serratia* and *Citrobacter* spp respectively. Allowing for the rarity with which carbapenem resistance is confirmed by reference laboratory testing of *Enterobacteriaceae*, these reports of resistance should be treated with caution.

Commentary

The main message, as in previous reviews of the bacteraemia data, is a plea for our contributors to continue to improve the reporting of the antimicrobial susceptibilities. Gentamicin and ciprofloxacin susceptibility data was reported for between 56% and 65% of bacteraemias due to *Klebsiella*, *Enterobacter*, *Serratia*, and *Citrobacter* spp; similar proportions to those in *E. coli* bacteraemia reports

(1). There was, however, great variation in the completeness of reporting between the regions, with Eastern and South East regions doing especially well. Increases in reports must be treated cautiously as clearly laboratory reporting is improving as an incremental process. It may be that susceptibility reporting follows on from initiating laboratory reporting and then improving the proportion of bacteraemias reported (2). This would suggest reporting does not just vary between institutions, but also varies by organism *within* an institution.

In terms of reported susceptibilities of these enterobacteria, gentamicin resistance is still unusual in some parts of the country; for instance no gentamicin resistance was reported from some regions in 1999 and 2000 for *Serratia* and *Citrobacter* spp, but it must also be remembered that some of these regions had poor susceptibility reporting. This affects the confidence with which true antimicrobial resistance prevalences across the country can be derived. By organism, however, with the exception of *Citrobacter* spp, there were only very small increases in resistance. This hides significant regional variation, with London region having the highest prevalence of gentamicin resistance in all these bacteraemias in 2000, with worrying rises in resistance for *Klebsiella*, *Serratia*, and *Citrobacter* spp over what was seen in 1999. Gentamicin resistance remained high in *Enterobacter* spp at 12% in both years in London region

Ciprofloxacin resistance is running at a higher level than gentamicin resistance in these enterobacteria and, as with gentamicin resistance, also showed some increases in the proportions resistant between 1999 and 2000. Overall across England and Wales, ciprofloxacin resistance rose from 7.7% to 9.5% in *Klebsiella* spp, 10.9% to 13.4% in *Enterobacter* spp, 22% to 29% in *Serratia* spp and 5.8 to 9.9% in *Citrobacter* spp between 1999 and 2000. Again, this masked large inter-regional variations with London region reaching ciprofloxacin resistance levels of 21% and 29% in *Klebsiellae* spp and *Citrobacter* spp, whilst 22% of *Enterobacter* spp in the North West were resistant. The highest prevalence of ciprofloxacin-resistance was seen in *Serratia* spp in Wales region. In 1999 and 2000 prevalences were 44% and 55% respectively, compared to a maximum of 38% in any other region in 2000.

Levels of susceptibility reporting were generally lower for other antimicrobials, such as ceftazidime and imipenem. There were very few reports for meropenem susceptibility and none for piperacillin-tazobactam. At the opposite end of the scale, reports on the susceptibility of these organisms to amoxicillin/ampicillin are still coming in, although these species all have chromosomal beta-lactamases that confer resistance to these antimicrobials. Ceftazidime resistance is a useful marker of extended spectrum beta-lactamase (ESBL) production in *Klebsiella* spp, the main host of ESBLs other than *E. coli*, whilst ceftazidime resistance in *Enterobacter* spp and *Citrobacter freundii* is usually due to the hyperproduction of chromosomal AmpC beta-lactamase. To reiterate a point made before (1), a defined set of antimicrobials to be tested and reported for particular groups of organisms needs to be agreed. It is suggested that relevant ones for the enterobacteria examined in this review are: gentamicin, ciprofloxacin, piperacillin-tazobactam, cefotaxime, ceftazidime, and imipenem (or meropenem).

There were five reports of imipenem resistance in *Klebsiella* spp in 1999 and three in 2000. Imipenem resistance is still extremely rare in *Enterobacteriaceae* and to date there has been no genuine imipenem resistance in *Klebsiella* spp isolates referred to the Laboratory of Enteric Pathogens or the Antibiotic Resistance Monitoring and Reference Laboratory, PHLS Central Public Health Laboratory. Imipenem is chemically unstable, so apparent imipenem resistance is sometimes an indicator of disc deterioration. Given this situation, the Antibiotic Resistance Monitoring and Reference Laboratory would be pleased to receive any isolates where imipenem or meropenem resistance is suspected.

The proportion of the total number of bacteraemia caused by *Klebsiella*, *Enterobacter*, *Serratia*, and *Citrobacter* spp remained remarkably constant over these two years, as did the numbers of reports. Interestingly, Wales region was not predominant in terms of its high reporting rate for these organisms, as it was for *E. coli* and *Proteus* spp *Morg. morgani* in the earlier report (1).

[1. CDSC. Group A, C and G streptococci: *Escherichia coli* and *Proteus* spp/*Morganella morgani* bacteraemia, England and Wales: January to December 2000. *Commun Dis Rep CDR Wkly* \[serial online\] 2001 \[cited 15 March 2001\]; **11** \(11\): bacteraemia.](#)

[2. CDSC. *Staphylococcus aureus* bacteraemia: England and Wales, January to December 2000. *Commun Dis Rep CDR Wkly* \[serial online\] 2001 \[cited 12 March 2001\]; **11** \(7\): bacteraemia.](#)

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