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News

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Increase in *Salmonella* Paratyphi A phage type 1 and *Salmonella* Typhi Vi-phage type E1 in England and Wales

An increase in the number of laboratory confirmed infections of *Salmonella* Paratyphi A and *S.* Typhi was seen by the Health Protection Agency Centre for Infections in the first five weeks of 2006. Between 1 January and 5 February 2006, 17 cases of *S.* Paratyphi A Phage Type (PT) 1 and 14 cases of *S.* Typhi Vi-phage type E1 were confirmed by the Laboratory of Enteric Pathogens (LEP). The figures for the same period in 2005 were three (*S*. Paratyphi A PT1) and seven (*S*. Typhi Vi-phage type E1).

Ten of the 17 cases of *S.* Paratyphi A PT1 reported foreign travel, with the majority having visited the Indian sub-continent and one was a secondary case. The remaining six cases were non travel-associated, four being part of a cluster in residents of Leicester, one a resident of Leeds, and one of Birmingham. The median age of the non-travel associated cases was 42 years (range 30 to 58 years) and five (83%) cases were men. The date of onset for these cases was from 8 December to 31 December 2005. Local investigations are continuing to establish whether there is a link between these cases. Fourteen of the 17 isolates were resistant to nalidixic acid and exhibited decreased susceptibility to ciprofloxacin (NxCpL). Pulsed field gel electrophoresis (PFGE) work is underway on isolates from the United Kingdom acquired infections and on a selection of isolates from patients with a history of foreign travel.

Of the 14 cases of *S.* Typhi Vi-phage type E1, 6 were members of the same family in the Manchester area. The first case to present in this family outbreak had not travelled abroad, but two cases in the extended family had recently returned from the Indian sub-continent. A further five cases of *S.* Typhi Vi-phage type E1 reported foreign travel and two were secondary cases. The travel history of one remaining case is unknown. Thirteen of the 14 isolates from these cases were resistant to nalidixic acid and exhibited decreased susceptibility to ciprofloxacin (NxCpL), including all isolates from patients in the Manchester area.

Typhoid and paratyphoid are endemic in regions of the world where there is poor sanitation and a lack of clean drinking water, and outbreaks are frequent in these areas. Routine surveillance shows that where travel history is available, the Indian sub-continent is the main region of travel for those returning to the United Kingdom with typhoid and paratyphoid A infections (1). A substantial increase in isolations of both *S*. Typhi and *S.* Paratyphi A with resistance to nalidixic acid and concomitant reduced susceptibility to ciprofloxacin has been reported from infections in the Indian sub-continent and in returning travellers in the last five years (2).

Typhoid vaccine is available for travellers visiting high-risk areas of the world and for household contacts of typhoid carriers. There is, however, no vaccine for paratyphoid and travellers to endemic areas should therefore practice basic food and water hygiene precautions in order to prevent all types of enteric fever and other diseases transmitted by this route. Information about prevention of enteric fever in travellers is available from the National Travel Health Network and Centre website <http://www.nathnac.org/pro/index.htm>.

Active follow-up of typhoid and paratyphoid cases ceased in 1993 and the reporting of travel history for both infections has declined since 1994. Travel history information for a large proportion of routinely reported infections still needs to be improved to allow interpretation of trends and a better understanding of travel-associated infections. Enhanced surveillance of these infections would be beneficial to investigate risk factors within different population groups and the effectiveness of preventative measures. A pilot study for enhanced surveillance of enteric fever is planned for later in the year.

Reference

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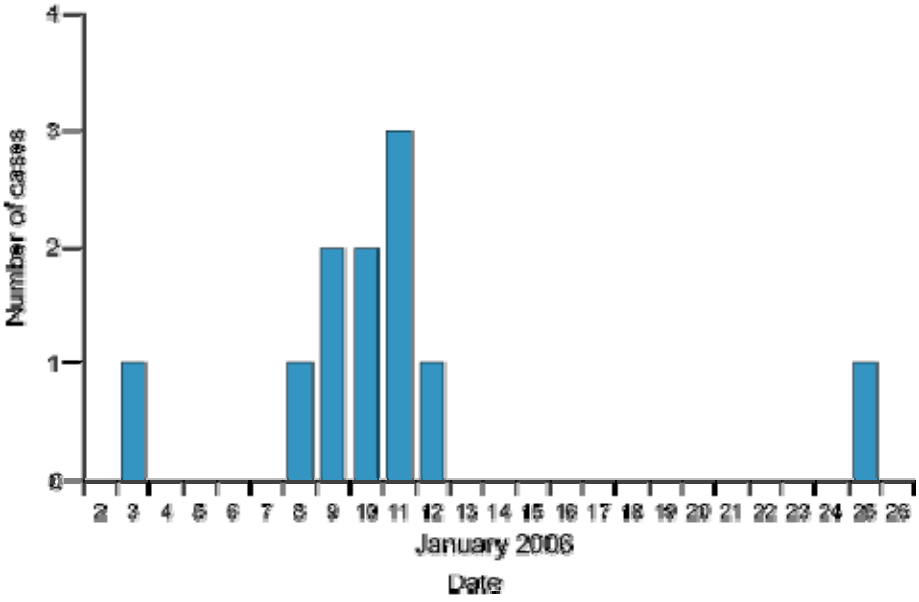
A swimming pool associated cluster of cryptosporidiosis

A Health Protection team in the north west of England has been investigating a cluster of cases of cryptosporidiosis linked to a local swimming pool complex visited by people from across the United Kingdom (UK). After a third affected family group was reported to the local Environmental Health Department, active case finding was instituted via both Health Protection Scotland and the Health Protection Agency. Eleven confirmed cases in eight family groups had been identified by 14 February, with all but one reported prior to 26 January. Some other members of the family groups were also ill, but have not been confirmed as having cryptosporidiosis. Further descriptive epidemiology is being carried out.

The case definition was people with laboratory confirmed cryptosporidiosis who had visited the complex after 2 January 2006. All cases visited within the time period from 2 to 9 January, with eight staying over the same period from 2 to 6 January and one there only on 4 January. All cases swam in the pools. One case developed symptoms on 3 January whilst at the complex and swam on 3 and 4 January. For all but one of the others the dates of onset of diarrhoea were from 8 to 12 January. The age range of cases was from 20 months to 46 years, with three pre-school children, three of junior school age (5 to 11 years), two teenagers and three adults. To date, four cases have been confirmed as having Cryptosporidium hominis, by the UK Cryptosporidium Reference Unit, in Swansea, including the case who developed symptoms while staying at the complex.

The incubation period for cryptosporidium is usually five to seven days. If 4 January is assumed to be the day of pool contamination and infection of the swimmers, an incubation period of four to eight days is apparent for all but the final case, who became ill on 25 January. This case either had an incubation of 21 days or may be a secondary case acquired from their spouse who was symptomatic with onset of 10 January, but was not confirmed by laboratory testing.

Figure 1. Cryptosporidiosis cases by onset dates for diarrhoea



An outbreak team has met and formulated a working hypothesis that there was a point source contamination of the swimming pool by the index case. In previous swimming pool outbreaks there is often no evidence of a faecal release and it is plausible that outbreaks can occur due to residual faeces on skin alone. It is assumed all other cases were in and around the same area of pool at the time. This is currently being checked through follow-up questioning. The pool complex includes a main wave pool and a children's / toddler's pool. Water flows into the main pool, out into the children's pool and then to the filtration system before recirculation. The centre follows clear operating procedures based on guidance from the Pool Water Treatment Advisory Group (1) and the Health and Safety Executive (2). Their main system for removal of cryptosporidium oocysts is filtration. Prior to filtration water is continuously dosed with a flocculent. The filters are routinely backwashed. The

pool complex uses ozone disinfection, with residual chlorine. Ozone has better activity than chlorine against cryptosporidium oocysts (3) but a number of outbreaks have occurred in ozonated pools (4).

It was agreed by the outbreak team that in this incident, the standard operating procedures and pool maintenance used by the centre have worked very well, preventing what could have been a much larger outbreak of cryptosporidiosis, considering there were a large number of people using the complex over the time period with over 1000 people in the whole pool network on any one day.

References

1. Pool Water Treatment Advisory Group. *Swimming pool water: treatment and quality standards.* Diss: BC Publications, 1999. ISBN 09517007 6. Purchasing details at <http://www.pwtag.org/home.html>
2. Health and Safety Executive. *Managing health and safety in swimming pools.* HSE 179. London: HSE, 2003. ISBN: 0717626865
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4. *Review of outbreaks of cryptosporidiosis in swimming pools.* DWI0812. Drinking Water Inspectorate, 2000. Executive summary available at <http://www.fwr.org/waterq/dwi0812.htm>.

Referral of pneumococcal isolates from normally sterile sites to Respiratory and Systemic Infection Laboratory, HPA Centre for Infections, Colindale

The Department of Health has announced that heptavalent pneumococcal conjugate vaccine (PNC-7) is to be introduced into the routine infant immunisation schedule in the United Kingdom at 2, 4, and 13 months (1). The routine use of this vaccine in the United States (US) has led to a 94% reduction in cases of invasive pneumococcal disease (IPD) caused by one of the seven vaccine-preventable serotypes in young children. There has also been a 60% fall in cases of IPD due to vaccine serotypes in patients aged over 65 years (2) presumably as a result of reduction in carriage in the population with consequent herd immunity. In the US increases of IPD caused by pneumococci of non vaccine-preventable serotypes, have been observed in both adults and children (3). An increase of IPD caused by pneumococci of serotype 19A (a non-vaccine serotype) has also been reported in the US accompanied by an increase of genetic diversity within this serotype (4) .Despite these findings, the reduction in IPD due to direct and indirect protection afforded by the vaccine considerably outweighs the increase in disease due to serotype replacement (2). There are some indications that serotype replacement may be limited to certain non-vaccine serotypes, as has been observed in a Finnish study of the vaccine's efficacy in preventing acute otitis media (4).

Following the introduction of PNC-7 all cases of IPD in England and Wales reported to the HPA Centre for Infections in the age groups targeted for vaccination will be followed up for PNC-7 or plain pneumococcal polysaccharide (PPV- currently routinely offered to all aged 65 years and over) vaccination history and outcome.

Continued surveillance of the serotype distribution of pneumococci causing IPD will be essential in order to identify serotype replacement by non-vaccine serotypes and to monitor the overall impact of PNC-7 not only in young children but also in other age groups. Microbiologists are reminded that **all** pneumococcal isolates from normally sterile sites (blood, cerebrospinal fluid [CSF], pleural aspirate, empyaema, joint aspirate) in patients of **all** ages should be submitted to the Respiratory and Systemic Infection Laboratory for serotyping. Isolates should be submitted on blood agar slopes (the slope should be inoculated but not incubated before posting) to Streptococcus and Diphtheria Reference Unit, RSIL, HPA Centre for Infections, 61 Colindale Avenue, London NW9 5EQ; HAYS DX: HPA Colindale, SRMD (RSIL) DX 6530011 Colindale NW. Contact Dr Androulla Efstratiou; tel 020 8327 7270 email androulla.Efstratiou@hpa.org.uk Dr Mary Slack; tel 020 8327 6091; email mary.slack@hpa.org.uk or Dr Robert George; tel 020 8327 7222 email robert.george@hpa.org.uk for further details.

References

1. Department of Health. *Pneumococcal vaccine added to the childhood immunisation programme: more protection against meningitis and septicaemia.* London: Department of Health, 8 February 2006.
2. Whitney CG, Farley MM, Hadler J *et al.* Decline in invasive pneumococcal disease after the introduction of protein-polysaccharide conjugate vaccine *N Engl J Med* 2003; **348** : 1737-46.
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Erratum: New case of transfusion-associated variant-CJD Vol 16 no 6, 9 February 2006

There was an error in the description of the results of the collaborative study between the National Blood Services, the National CJD Surveillance Unit, and the Office for National Statistics into evidence of transmission of CJD by transfusion in the piece New case of transfusion-associated variant-CJD published in *CDR Weekly* Vol 16 no 6. The statement that "23 [vCJD cases] are known to have donated blood" is incorrect: not all of these individuals donated blood issued for transfusion. The report should read "Review of data at blood centres has found records for 23 of the 160 vCJD cases (prior to their vCJD diagnosis). For 18 of these 23 cases, blood components were issued to hospitals for transfusion". The pdf file for Vol 16 No 6 has been amended appropriately.

Acinetobacter spp bacteraemia, England, Wales, and Northern Ireland: 2004

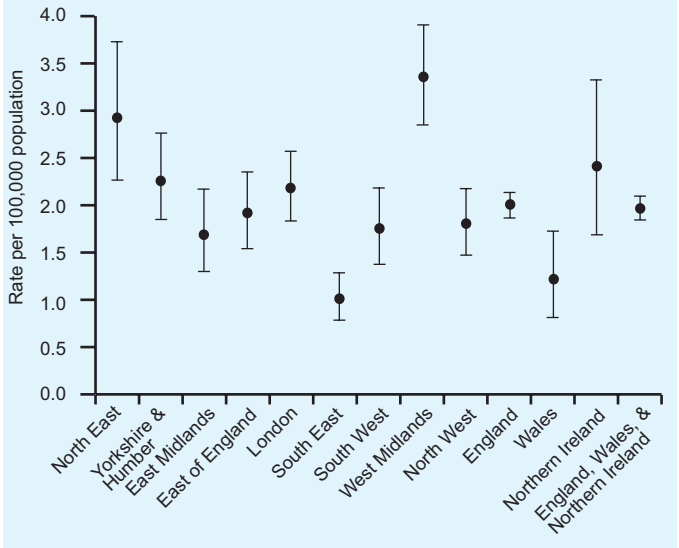
Key points:

- In 2004, 1114 reports of bacteraemia attributed to *Acinetobacter* spp were made in England, Wales, and Northern Ireland, a 2% increase on 2003.
- The number of laboratories reporting *Acinetobacter* spp bacteraemia isolates in 2004 varied widely across England with an average 76% of laboratories reporting isolates. More than 95% of laboratories in East of England, South West, and West Midlands regions reported isolates while only 53% of London region laboratories made any reports.
- Thirty-one isolates of multi-drug resistant (MDR) (as measured by number of isolates resistant to gentamicin, ciprofloxacin, ceftazidime, and imipenem and/or meropenem) were reported in 2004, a 41% increase on the 22 isolates reported in 2003. The true number of cases is probably higher because of suspected under-reporting from the London region, where the majority of cases of MDR were reported in 2004. MDR accounted for 3% of total reported *Acinetobacter* spp bacteraemia isolates in 2004, up from 2% of reported isolates in 2003.
- Although 42% of these isolates were not fully speciated this represents a 9% improvement on 2003 when almost half the isolates (47%) were not speciated.
- Only 52% of reported *A. baumannii/A. calcoaceticus* isolates were tested for imipenem or meropenem susceptibility, the drugs of choice for *Acinetobacter* spp bacteraemia; however the ascertainment of antimicrobial susceptibility improved in 2004 for the majority of antibiotics as compared with 2003.
- More laboratories reported antimicrobial susceptibility information in 2004 (90% of reporting laboratories) as compared to 2003 (83% of reporting laboratories).
- Resistance among *Acinetobacter* spp. isolates varied according to the species, antimicrobial agent, and geographic location.

This report describes *Acinetobacter* spp isolated from blood specimens by laboratories in England, Wales, and Northern Ireland and reported via a voluntary surveillance system in 2004. Age and region-specific rates were calculated using 2004 mid-year resident population estimates. STATA* statistical software was used to calculate 95% confidence intervals. Regional analyses were carried out according to the English regional boundaries introduced in April 2002. Where antibiotic resistance is given as a percentage, it is always as a percentage of reports including susceptibility information.

*Stata Statistical software: release 8.2. College Station, Texas, Stata Corporation, 2001.

Figure 1 Region-specific rates* of Acinetobacter spp bacteraemia, England, Wales, and Northern Ireland: 2003



*Rates calculated using 2003 mid-year population estimates

Acinetobacter spp

There were 1114 reports made of *Acinetobacter* spp bacteraemia in England, Wales, and Northern Ireland in 2004 (table 1). Of these, 42% (467 reports) were not identified to the species level. Full identification needs molecular methods that are not routinely available. Of those that were speciated, 34% of the reports indicated *A. baumannii/ calcoaceticus* and 20% *A. lwoffii.*

The remainder were *A. haemolyticus, A. johnsonii,* and *A. junii* although the accuracy of these species breakdowns

Table 1 Laboratory reports of *Acinetobacter* spp bacteraemia, England, Wales, and Northern Ireland: 2003-2004

	Number of reports	
	2003	2004
Acinetobacter not fully identified	515	467
Acinetobacter baumannii	310	340
Acinetobacter calcoaceticus	36	34
Acinetobacter haemolyticus	24	20
Acinetobacter johnsonii	1	3
Acinetobacter junii	24	26
Acinetobacter lwoffii	177	224
Total *Acinetobacter* spp	**1087**	**1114**

Table 2 Laboratory reports of *Acinetobacter* spp bacteraemia by region and species, England, Wales, and Northern Ireland: 2004

Region Name	*Acinetobacter* not fully identified (%)	*A. baumannii* and *A. calcoaceticus (%)*	*A. lwoffii* (%)	*A. haemolyticus*, *A. junii*, and *A. johnsonii (%)*	*Acinetobacter* spp total
North East	27 (36)	24 (32)	19 (25)	5 (7)	75
Yorkshire & Humber	45 (38)	44 (38)	18 (15)	10 (9)	117
East Midlands	46 (61)	16 (21)	14 (18)	– (–)	76
East of England	51 (47)	32 (29)	24 (22)	2 (2)	109
London	93 (56)	43 (26)	25 (15)	5 (3)	166
South East	44 (48)	28 (30)	17 (18)	3 (3)	92
South West	27 (29)	26 (28)	32 (35)	7 (8)	92
West Midlands	59 (33)	70 (39)	43 (24)	6 (3)	178
North West	47 (37)	61 (48)	12 (9)	8 (6)	128
England	**439 (42)**	**344 (33)**	**204 (20)**	**46 (4)**	**1033**
Wales	**8 (21)**	**17 (44)**	**13 (33)**	**1 (3)**	**39**
Northern Ireland	**20 (48)**	**13 (31)**	**7 (17)**	**2 (5)**	**42**
England, Wales, and Northern Ireland	**467 (42)**	**374 (34)**	**224 (20)**	**49 (4)**	**1114**

is questionable. There was regional variation in how fully acinetobacter were speciated. The percentage of acinetobacter with no indication of species varied from 21% to 61% of total reports across regions (table 2).

Across regions, rates of *Acinetobacter* spp bacteraemia varied between 1.13 (South East) and 3.34 (West Midlands) per 100,000 population (figure 1). Laboratory ascertainment rates ranged from 53% to 100% across regions (table 3). *A. baumanii/calcoaceticus* is not ubiquitous and would usually be reported by hospitals with specialist burns units and intensive care units (ITUs) which could partially account for the reduced ascertainment in some regions. The full extent of under-reporting, however, is unclear in all regions as these reports are from the voluntary surveillance system.

Antibiotic susceptibility

The number of laboratories that provided antibiotic susceptibility information along with *Acinetobacter* spp bacteraemia reports varied across regions (table 3). Although the number of laboratories reporting *Acinetobacter* spp bacteraemia reports is unchanged on 2003, the number reporting susceptibility has increased for England (from 83% to 90%) and Wales (from 45% to 70%) but is unchanged for Northern Ireland (58%). Gentamicin was the most commonly reported antibiotic followed by ciprofloxacin for both *A. baumannii/ A. calcoaceticus* and *A. lwoffii* isolates (table 4). With the exception of imipenem, the testing for all antibiotics increased on 2003. As laboratories generally report for either imipenem or meropenem, the number of reports in which either or both carbapenems have been tested for susceptibility is 52% in *A. baumannii/ A. calcoaceticus* isolates and 44% in *A. lwoffii* isolates.

Overall, resistance levels were higher in *A. baumannii/ A. calcoaceticus* bacteraemia isolates compared with *A. lwoffii* isolates. When gentamicin susceptibility information was given, resistance to gentamicin was reported in 26% of reports for *A. baumannii/ A. calcoaceticus* isolates compared to a level of 1% in *A. lwoffii* isolates. With the exception of meropenem,

Table 3 Laboratory and susceptibility ascertainment data for *Acinetobacter* spp bacteraemia reports, England, Wales, and Northern Ireland: 2003

Region	Number of laboratories*	Number reporting *Acinetobacter* spp bacteraemias (%)	Number reporting susceptibility information for *Acinetobacter* spp bacteraemias† (%)
North East	13	12 (92)	12 (100)
Yorkshire & Humber	24	18 (75)	15 (83)
East Midlands	11	9 (82)	8 (89)
East of England	19	18 (95)	18 (100)
London	34	18 (53)	15 (83)
South East	29	19 (66)	17 (89)
South West	17	17 (100)	14 (82)
West Midlands	20	19 (95)	17 (89)
North West	30	19 (63)	18 (95)
England	**197**	**149 (76)**	**134 (90)**
Wales	**14**	**10 (71)**	**7 (70)**
Northern Ireland	**12**	**7 (58)**	**3 (43)**

*Provisional data. †As a percentage of total reports from speicified region/country

Table 4 Susceptibility reports for *A. baumannii / A. calcoaceticus, and A. lwoffii,* England, Wales, and Northern Ireland: 2003-2004

	2003						2004					
	Resistant*	(%)	Sensitive	No Information†	(%)	Total reports	Resistant*	(%)	Sensitive	No Information†	(%)	Total reports
A. baumannii/ A. calcoaceticus												
Gentamicin	53	(23)	182	111	(32)	346	75	(26)	210	89	(24)	374
Amikacin	9	(11)	75	262	(76)		15	(16)	76	283	(76)	
Tobramycin	6	(12)	45	295	(85)		7	(14)	43	324	(87)	
Ciprofloxacin	69	(30)	160	117	(34)		95	(36)	171	108	(29)	
Imipenem	6	(7)	75	265	(77)		4	(5)	69	301	(80)	
Meropenem	3	(3)	92	251	(73)		16	(13)	112	246	(66)	
Ceftazidime	92	(52)	84	170	(49)		131	(69)	60	183	(49)	
Cefotaxime	96	(80)	24	226	(65)		134	(86)	22	218	(58)	
A. lwoffii												
Gentamicin	2	(2)	129	46	(26)	177	2	(1)	148	74	(33)	224
Amikacin	–	(–)	39	138	(78)		2	(5)	42	180	(80)	
Tobramycin	–	(–)	11	166	(94)		–	(–)	27	197	(88)	
Ciprofloxacin	5	(4)	111	61	(34)		7	(5)	137	80	(36)	
Imipenem	–	(–)	43	134	(76)		–	(–)	34	190	(85)	
Meropenem	–	(–)	32	145	(82)		–	(–)	65	159	(71)	
Ceftazidime	17	(23)	56	104	(59)		21	(23)	70	133	(59)	
Cefotaxime	16	(26)	46	115	(65)		15	(20)	59	150	(67)	

*As a percentage of reports with susceptibility information. †As a percentage of total reports.

Table 5 Antibiotic susceptibility data for *A. baumannii* and *A. calcoaceticus* bacteraemias, England, Wales, and Northern Ireland: 2003

Region/ Country	Gentamicin					Ciprofloxacin					Ceftazidime					Imipenem					Total reports
	Resistant*	(%)	Sensitive	No Information†	(%)	Resistant*	(%)	Sensitive	No Information†	(%)	Resistant*	(%)	Sensitive	No Information†	(%)	Resistant*	(%)	Sensitive	No Information†	(%)	
North East	–	(–)	21	3	(13)	5	(24)	16	3	(13)	7	(39)	11	6	(25)	–	(–)	2	22	(92)	24
Yorkshire & Humber	5	(16)	27	12	(27)	8	(24)	25	11	(25)	15	(68)	7	22	(50)	–	(–)	14	30	(68)	44
East Midlands	1	(8)	11	4	(25)	3	(23)	10	3	(19)	6	(55)	5	5	(31)	–	(–)	6	10	(63)	16
East of England	8	(27)	22	2	(6)	10	(45)	12	10	(31)	14	(52)	13	5	(16)	–	(–)	7	25	(78)	32
London	19	(56)	15	9	(21)	21	(64)	12	10	(23)	23	(85)	4	16	(37)	3	(43)	4	36	(84)	43
South East	6	(27)	16	6	(21)	10	(45)	12	6	(21)	12	(60)	8	8	(29)	1	(14)	6	21	(75)	28
South West	10	(40)	15	1	(4)	12	(55)	10	4	(15)	17	(85)	3	6	(23)	–	(–)	3	23	(88)	26
West Midlands	24	(44)	30	16	(23)	22	(54)	19	29	(41)	14	(74)	5	51	(73)	–	(–)	4	66	(94)	70
North West	2	(5)	42	17	(28)	3	(7)	39	19	(31)	11	(85)	2	48	(79)	–	(–)	16	45	(74)	61
Wales	–	(–)	5	12	(71)	–	(–)	12	5	(29)	10	(100)	–	7	(4)	–	(–)	6	11	(65)	17
Northern Ireland	–	(–)	6	7	(54)	1	(20)	4	8	(62)	2	(50)	2	9	(69)	–	(–)	1	12	(92)	13
Total	**75**	**(26)**	**210**	**89**	**(24)**	**95**	**(36)**	**171**	**108**	**(29)**	**131**	**(69)**	**60**	**183**	**(49)**	**4**	**(5)**	**69**	**301**	**(80)**	**374**

*As a percentage of reports with susceptibility information. †As a percentage of total reports.

higher resistance levels were reported for all antibiotics for *A. baumannii/ A. calcoaceticus* isolates. There were no reports of tobramycin, imipenem, and meropenem resistance in *A. lwoffii* isolates although the number of reports with susceptibility information for these antibiotics was fairly low.

Ascertainment of antimicrobial susceptibilities varied across all regions of England. The ascertainment of gentamicin susceptibility for *A. baumannii/ A. calcoaceticus* isolates ranged from 4% and 28% with resistance levels varying between 0% and 56% (table 5). Ciprofloxacin susceptibility ascertainment

Table 6 Multidrug resistant isolates in all *Acinetobacter* spp, England, Wales, and Northern Ireland: 2003-2003

Isolate type	2003	2004	% change
Isolates resistant to all three of gentamicin, ciprofloxacin, and ceftazidime	75	67	(-11%)
Isolates resistant to all four of gentamicin, ciprofloxacin, ceftazidime, and imipenem/ meropenem	22	31	(41%)
Total number of isolates resistant to three or more of gentamicin, ciprofloxacin, ceftazidime, imipenem and meropenem	79	70	(-11%)

ranged from 13% to 41%, with resistance levels varying from 7% to 64%. Ceftazidime susceptibility ascertainment ranged from 16% to 79% with resistance levels varying from 39% to 85%.

Acinetobacter spp bacteraemia isolates showing multi-drug resistance patterns are shown in table 6. In 2004 there were 31 isolates resistant to all four of gentamicin, ciprofloxacin, ceftazidime and imipenem and/or meropenem; an increase of 41% on 2003 when 22 isolates were reported resistant to all four antibiotics. Fourteen of these isolates were identified as *A. baumannii/ A. calcoaceticus* with the remaining isolates not identified to species level. As a proportion of total *Acinetobacter* spp bacteraemia isolates reported these multi-drug resistant isolates account for 2% in 2003 and 3% in 2004. There is also an 11% decrease in the number of isolates resistant to gentamicin, ciprofloxacin, and ceftazidime (67 in 2004 compared to 75 in 2003). These multi-drug resistant isolates account for 6% of total *Acinetobacter* spp bacteraemia reports in 2004 compared with 7% in 2003.

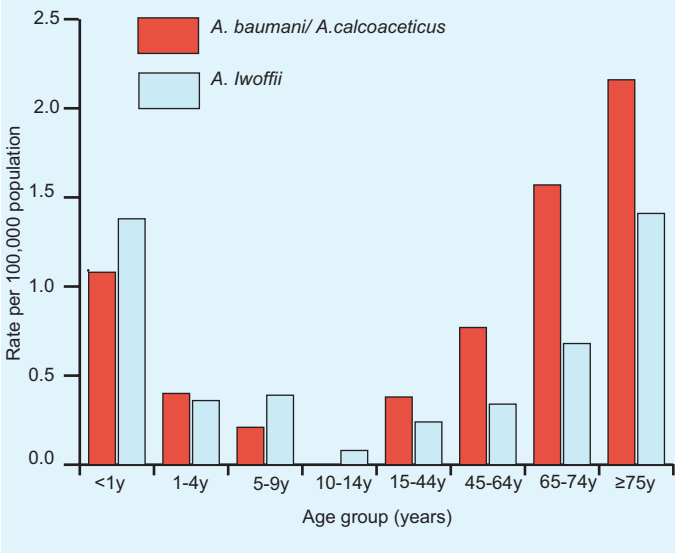
Age distributions

Rates of *Acinetobacter* spp bacteraemia were highest in the under one year and over 45 years age groups (figure 2). *A. baumannii/A. calcoaceticus* predominated over *A. lwoffii* as the causative agent in the older age groups, being highest in those from the 15 to 44 years age group upwards. Rates of *A. lwoffii* bacteraemia predominate those of *A. baumannii/ A. calcoaceticus* bacteraemia in the younger age groups (*ie*, 9 years and younger).

Discussion

The total number of reports of *Acinetobacter* spp bacteraemia increased by 2% between 2003 and 2004 but this represents a reduced yearly rate of increase as previous yearly increases were 6% (between 2002 and 2003) and 8% (between 2001 and 2002) (1,2). Between 2003 and 2004 the rate of *Acinetobacter* spp bacteraemia in England, Wales and Northern Ireland increased insignificantly from 1.99 to 2.03 per 100,000 population. Within regions, rates fluctuated from 2003 to 2004. In England only the East of England had a significant increase (51%) of reported cases of *Acinetobacter* spp bacteraemia between 2003 (72 reports) and 2004 (109 reports); this increase is probably due to the enhanced efforts of specialty units

Figure 2 Age-specific rates* of *Acinetobacter* spp bacteraemia per 100,000 population, England, Wales, and Northern Ireland: 2003



*Rates calculated using 2003 mid-year resident population estimates

within the region as 18 of 19 laboratories reported isolates in 2004. All other regions of England had marginal changes between 2003 and 2004, with five regions having increased and three having decreased reporting rates of *Acinetobacter* spp bacteraemia.

Between 2003 and 2004 the proportion of *Acinetobacter* spp reports without any information regarding antimicrobial susceptibility fell from 25% to 20%. The proportion of *A. baumannii/ A. calcoaceticus* reports without information on susceptibility to gentamicin fell from 32% to 24%; but the proportion of resistant isolates increased from 23% to 26%. For ciprofloxacin, the proportion of *A. baumannii/ A. calcoaceticus* reports without susceptibility information fell from 34% to 29%; the level of resistance increased from 30% to 36%. For the carbapenems, the proportion of *A. baumannii/ A. calcoaceticus* reports without suspectibility information fell from 52% in 2003 to 48% in 2004 while for *A. lwoffii* the proportion fell from 59% in 2003 to 56% in 2004. As carbapenems are one of the treatment drugs of choice for *Acinetobacter* spp it is imperative that the susceptibility reporting rate for imipenem and/or meropenem improves from 50% of total reports containing no information.

The number of isolates exhibiting multi-drug resistance to gentamicin, ciprofloxacin, ceftazidime and imipenem and/or meropenem has increased from 22 in 2003 to 31 in 2004; however, the number of isolates resistant to any three of these five medications has decreased from 79 in 2003 to 70 in 2004. The increase in multi-drug resistant isolates from 2003 to 2004 may be linked to three multiresisant clones (SE and OXA-32 clones 1 and 2) of *A. baumannii* which have been identified by the Health Protection Agency's Laboratory of Healthcare Associated Infection (LHCAI) from 2000 to 2004 (3,4,5).

Of the 31 isolates showing multi-drug resistance to gentamicin, ciprofloxacin, ceftazidime and imipenem and/or meropenem, 22 were found in three London hospitals, a result that reflects recent literature (4,5,6,7). That only four of these 22 reports contained speciated information and fewer than half London laboratories reported isolates in 2004 exemplifies

the limits in the voluntary bacteraemia reporting system in capturing the full extent of highly multi-drug resistant strains circulating around London and the South East. Furthermore, the mainstay of treatment of serious infection with these multi-resistant strains of *A. baumannii* is polymyxin; however, no susceptibility reports of polymyxin were reported through the voluntary surveillance system in 2004. Other antibiotics showing clinical activity against *A. baumannii* include tigecycline and sulbactam (8). Tigecycline was approved for marketing in the United States in June 2005 but has not yet been authorised in the EU, although it is available in the UK on a 'named-patient basis' through individual doctors.

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