Health Protection Agency

CDR WEEKLY

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MAIN STORIES THIS WEEK

REPORTS BY INFECTION

Bacteraemia

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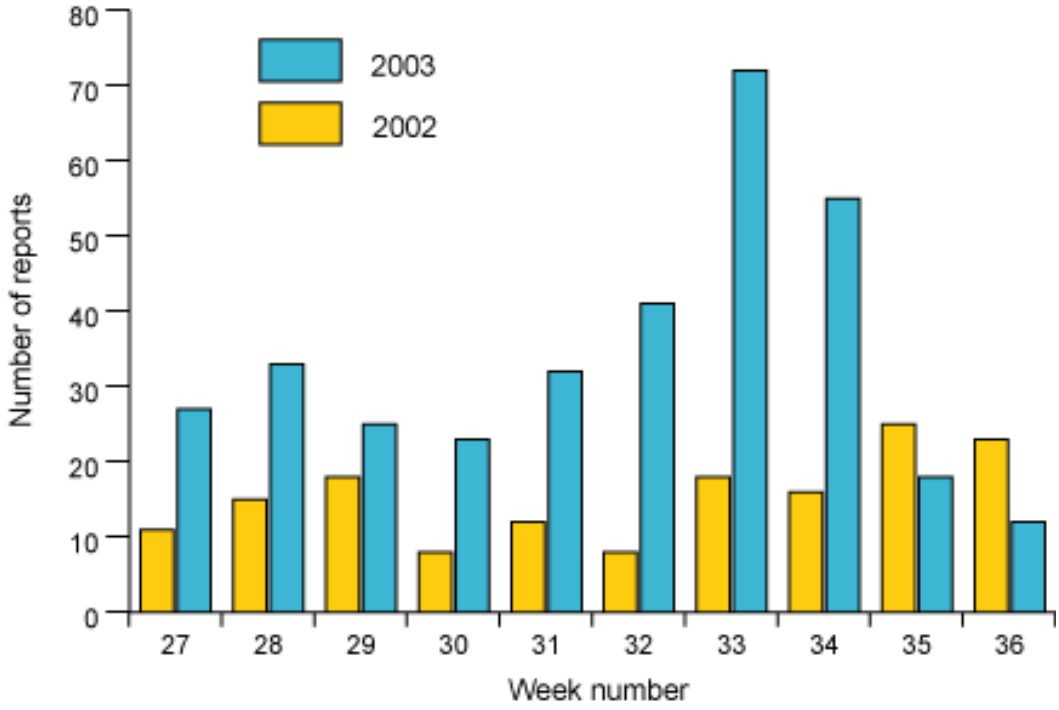
News

Last updated: **18 September 2003**
Next update due: **25 September 2003**

National outbreak of *Salmonella* Enteritidis phage type 14b - update

Cases of *Salmonella* Enteritidis phage type (PT) 14b continue to accumulate. Figure 1 shows the number of laboratory confirmed cases reported in England and Wales since week 27 (week ending 6 July 2003) by specimen date. In total 338 cases have been confirmed by the Health Protection Agency's Laboratory of Enteric Pathogens, compared with 154 in the same period last year (a 119% increase).

Figure Laboratory confirmed cases of *Salmonella* Enteritidis PT14b in England and Wales by specimen date: 2002 and 2003



Since 21 July 2003, when a national case-control study commenced, 108 potentially eligible cases have been reported to the HPA Communicable Disease Surveillance Centre. Forty-seven cases were subsequently found to be ineligible for inclusion in the study (25 proved to be involved in local outbreaks around the country, three are hospital in-patients) and repeated attempts to contact 19 cases have failed. Thirteen case and 19 control interviews have been completed so far and efforts to interview cases and controls are continuing.

Related links

National increases in salmonellosis. *CDR Weekly* Vol 13 No 30 (24 July 2003)
National increases in salmonellosis – update. *CDR Weekly* Vol 13 No 33 (14 August 2003)
National increase in *Salmonella* Enteritidis outbreaks. *CDR Weekly* Vol 13 No 35 (29 August 2003)

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Latest SOPHID data show a 20% increase in the annual numbers seen for HIV-related care

Latest SOPHID data show a 20% increase in the annual numbers seen for HIV-related care
Newly-released data from the survey of prevalent diagnosed HIV infection (SOPHID) show a 20% increase in the number of individuals seen for HIV-related care in England, Wales, and Northern Ireland. A total of 30,281 individuals were seen in 2002, compared to 25,203 in 2001.

The SOPHID survey began in 1995 and continues to provide an estimate of the numbers of individuals living with diagnosed HIV. Information is used in the planning and financing of HIV care services, and in health promotion, at both the local and national level.

Latest results from the SOPHID survey can be found at:
<http://www.hpa.org.uk/infections/topics_az/hiv_and_sti/publications/sophid2002.pdf>.

Current Issue: Volume **13** Number **38** **Published on**: 18 Sept 2003

Bacteraemia

Last updated: **18 September 2003**
Next update due: **16 October 2003**

Staphylococcus aureus bacteraemia: England, Wales, and Northern Ireland, April to June 2003

Key points:

- Between April and June 2003, 3345 *Staphylococcus aureus* bacteraemia reports were received from England (3016), Wales (180), and Northern Ireland (149) under the voluntary laboratory reporting scheme*.
- In the same time period, 4725 reports were received from England under the mandatory reporting scheme†.
- Methicillin resistance as a proportion of *S. aureus* bacteraemias with susceptibility information was 50% for Wales, and 40% for England and Northern Ireland (voluntary reporting). Under the English mandatory scheme, the proportion was 39%.
- There has been a continuing improvement in the reporting of methicillin susceptibility under the voluntary scheme, this information having been provided in 93% of reports between April and June 2003.

* Voluntary reporting: undertaken by most laboratories in England and Wales for many years. Laboratories report individual clinically significant infections on a regular basis, usually weekly. † Mandatory reporting: established in England in April 2001. Acute NHS Trusts send quarterly aggregate reports of total numbers of S. aureus bacteraemias, including MRSA.

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Introduction

This report covers *Staphylococcus aureus* bacteraemias identified during the second quarter of 2003, between April and June 2003 under the voluntary laboratory reporting scheme in England, Wales, and Northern Ireland and the mandatory reporting scheme in England*. All reports concern *S. aureus* isolated from blood, with or without cerebrospinal fluid. In England, a mandatory bacteraemia reporting scheme was established in 2001. Northern Ireland (1) and Wales (2) have their own mandatory methicillin resistant *Staphylococcus aureus* (MRSA) bacteraemia reporting schemes, which are not covered in this report.

Rates were calculated using 2001 resident population denominators for England, Wales, and Northern Ireland. Regional analyses were performed using the English regional boundaries introduced in April 2002. Data from the mandatory scheme were unavailable for two trusts in the North West region and one trust in the South West.

Data on where bacteraemias were contracted are largely unavailable and thus no distinction can be made between hospital-acquired and community-acquired *S. aureus* bacteraemias.

Staphylococcus aureus

A total of 3345 *S. aureus* bacteraemias were reported in England (3016), Wales (180), and Northern Ireland (149) through the voluntary reporting scheme between April and June 2003 (figure 1 and table 1). This compares to 4725 reports under the mandatory scheme in England, a 39% deficit (table 1). Among the English regions, the West Midlands had the highest number of *S. aureus* bacteraemia reports (472) under the voluntary scheme, while London had the highest number of reports (943) under the mandatory scheme. The lowest number of reports were received, under both schemes, from the North East region with 212 reports under the voluntary scheme, and 256 under the mandatory scheme. All regions reported higher numbers of *S. aureus* bacteraemias under the mandatory than the voluntary scheme. The greatest discrepancy between the schemes was noted for London, where over 70% of *S. aureus* reports under the mandatory scheme were not reported in the voluntary scheme. The smallest discrepancy was in the Eastern region.

The voluntary *S. aureus* bacteraemia reporting rate for England, Wales, and Northern Ireland was 6.22 per 100,000 population in the second quarter of 2003. This comprised rates of 6.13, 6.11, and 8.82 per 100,000 for England, Wales, and Northern Ireland respectively (figure 2). Within England, reporting rates (figure 2) ranged from 3.70/100,000 in London to 8.96/100,000 in the West Midlands region.

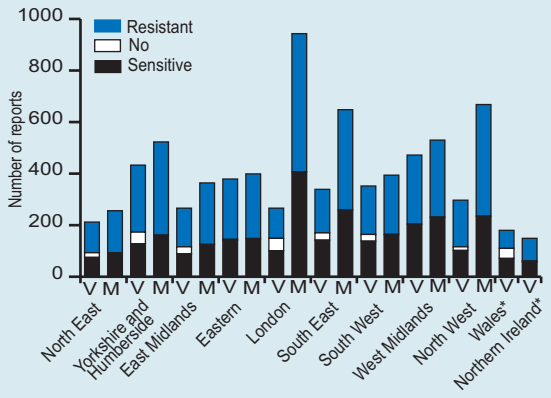
Antimicrobial susceptibility

Methicillin susceptibility

Methicillin susceptibility data for *S. aureus* bacteraemia reports received under the voluntary and mandatory schemes between April and June 2003 are shown in table 1 and figures 1 and 3. By definition, information on methicillin susceptibility is complete under the mandatory scheme. This information, however, is not always reported under the voluntary scheme and 93% of voluntary reports of *S. aureus* bacteraemias (2806/3016) from England included methicillin susceptibility

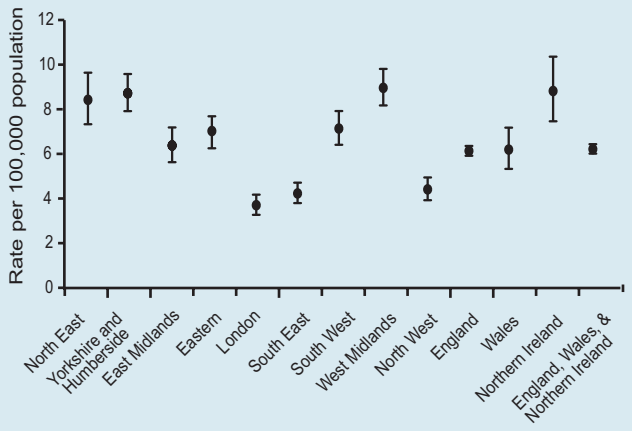
* Wales and Northern Ireland have separate mandatory surveillance schemes

Figure 1 *Staphylococcus aureus* bacteraemia reports and methicillin susceptibility data, England, Wales, & Northern Ireland: April 2003 - June 2003*



* Wales and Northern Ireland have separate mandatory surveillance schemes.V= Voluntary; M = Mandatory.

Figure 2 *Staphylococcus aureus* bacteraemia voluntary reporting rates* per 100,000 population (95% confidence intervals), England, Wales, & Northern Ireland: April 2003 - June 2003



*Rates calculated using 2001 mid-year resident population estimates for England, Wales, and Northern Ireland.

Table 1 *Staphylococcus aureus* bacteraemia reports and methicillin susceptibility data*, England, Wales, & Northern Ireland: April 2003 - June 2003

Region	Reporting scheme	Resistant	(%†)	Sensitive	No information	(%)	Total	% difference
North East	Voluntary Mandatory	75 93	39 36	119 163	18 –	8 –	212 256	17
Yorkshire & Humberside	Voluntary Mandatory	128 161	33 31	260 362	45 –	10 –	433 523	17
East Midlands	Voluntary Mandatory	89 125	37 34	150 239	27 –	10 –	266 364	27
Eastern	Voluntary Mandatory	141 148	38 37	234 251	4 –	1 –	379 399	5
London	Voluntary Mandatory	101 407	46 43	117 536	48 –	18 –	266 943	72
South East	Voluntary Mandatory	142 259	46 40	169 389	28 –	8 –	339 648	48
South West	Voluntary Mandatory	138 164	42 42	188 230	26 –	7 –	352 394	11
West Midlands	Voluntary Mandatory	204 231	43 44	268 299	– –	– –	472 530	11
North West	Voluntary Mandatory	102 235	36 35	181 433	14 –	5 –	297 668	57
England	Voluntary Mandatory	1120 1823	40 39	1686 2902	210 –	7 –	3016 4725	39
Wales‡	Voluntary	71	50	70	39	22	180	
Northern Ireland‡	Voluntary	58	40	88	3	2	149	
England, Wales, & Northern Ireland	Voluntary	1249	40	1844	252	8	3345	

* provisional data; †R as a percentage of R+S ; ‡ Wales and Northern Ireland have separate mandatory surveillance schemes
% Difference between the two schemes: 1-(voluntary/mandatory)*100

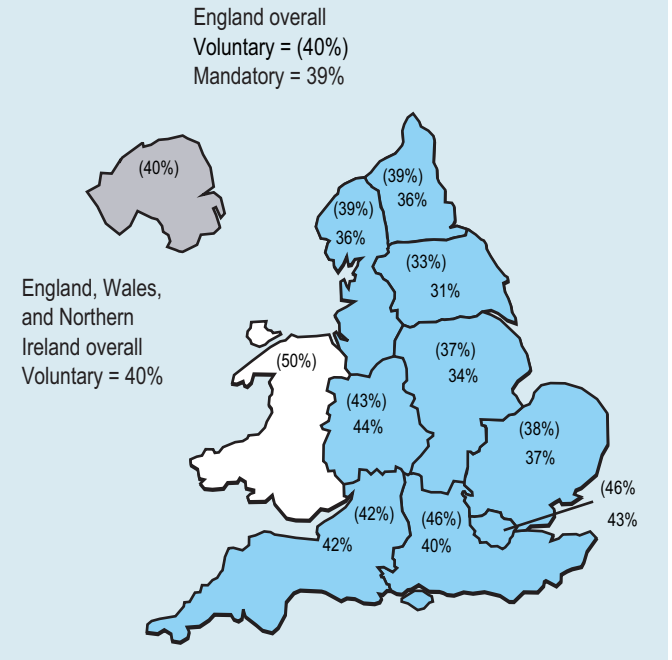
data. Of the English regions, London had the highest percentage of reports lacking susceptibility information for methicillin (18%, 48 reports) under the voluntary scheme, while all reports from the West Midlands region included methicillin susceptibility information. Seventy-eight per cent of reports from Wales and 98% of reports from Northern Ireland included methicillin susceptibility information.

In England, methicillin resistance was reported in 40% (1120/2806) of *S. aureus* bacteraemias with susceptibility information under the voluntary scheme and in 39% (1823/4725) under the mandatory scheme. The highest proportions of *S. aureus* methicillin resistant bacteraemia reports in England were in the West Midlands (43% voluntary and 44% mandatory), South East (46% voluntary and 40% mandatory), London (46% voluntary and 43% mandatory) and South West regions (42% voluntary and 42% mandatory) (table 1 and figures 1 and 3). Conversely, the lowest proportion of *S. aureus* methicillin-resistant bacteraemia was seen in Yorkshire and Humberside (33% voluntary and 31% mandatory) (table 1 and figures 1 and 3).

Most regions reported slightly higher proportions of methicillin-resistant *S. aureus* bacteraemias under the voluntary scheme than under the mandatory scheme. There was no difference between the two schemes in the South West region and the proportion of methicillin resistant isolates was higher in the mandatory scheme than the voluntary scheme in the West Midlands.

Methicillin resistance was reported in 50% of *S. aureus* bacteraemia reports from Wales, and 40% of *S. aureus* bacteraemia reports from Northern Ireland (as a percentage of isolates reported with methicillin susceptibility data).

Figure 3 Methicillin resistance in *Staphylococcus aureus* bacteraemia reports*, England, Wales, & Northern Ireland: April 2003 - June 2003. MRSA as a percentage of isolates whose susceptibilities were reported



* provisional data;
# Wales and Northern Ireland have separate mandatory surveillance schemes.

Other antimicrobials

Eighty-three per cent (2763/3345) of *S. aureus* bacteraemias reported under the voluntary scheme between April and June 2003 (England, Wales, and Northern Ireland) contained information on susceptibility to one or more of the following antimicrobials: ciprofloxacin, fusidic acid, erythromycin, gentamicin, mupirocin, rifampicin, and vancomycin. The region reporting the most information on susceptibility of *S. aureus* bacteraemia isolates to any antimicrobial other than methicillin was the Eastern region (93%), and the least susceptibility information was reported from Northern Ireland (36%).

After methicillin, erythromycin was the antimicrobial for which information on susceptibility was most commonly reported, and 73% of the *S. aureus* bacteraemia isolates reported in the voluntary scheme included these data, of which 38% were resistant to the drug. Fusidic acid (66%) and gentamicin (68%) susceptibilities were also widely reported, with 10% and 5% of isolates resistant, respectively. Information was reported for ciprofloxacin, mupirocin, rifampicin, and vancomycin susceptibilities in 31%, 36%, 44%, and 61% of reports respectively (table 2). The majority (52%) of isolates with susceptibility data reported for ciprofloxacin were resistant to this antimicrobial.

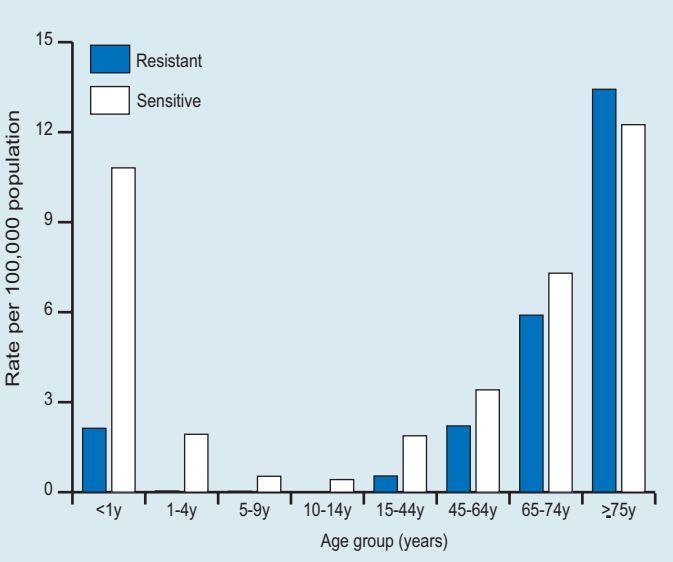
Thirty-one per cent of *S. aureus* bacteraemias reported by England, Wales, and Northern Ireland under the voluntary scheme between April and June 2003 contained information on susceptibility to teicoplanin. Five per cent of *S. aureus* bacteraemias reported under the voluntary scheme included susceptibility results for linezolid, the first licensed member of the oxazolidinone class of antibiotics that

Table 2 *Staphylococcus aureus* bacteraemia reports (voluntary reporting*) and susceptibility data: England, Wales, & Northern Ireland: April 2003 - June 2003

	Resistant	(%)†	Sensitive	No information	(%)‡
Ciprofloxacin	544	52	508	2293	69
Erythromycin	953	38	1503	889	27
Fusidic acid	221	10	1991	1133	34
Gentamicin	114	5	2176	1055	32
Mupirocin	77	6	1124	2144	64
Rifampicin	62	4	1421	1862	56
Vancomycin	–	–	2034	1310	39

* This information is not available under the mandatory surveillance scheme
† as a percentage of reports with susceptibility information
‡ reports with no susceptibility information as a percentage of total voluntary *S. aureus* reports

Figure 4 Age-specific *Staphylococcus aureus* bacteraemia rates* and methicillin susceptibility per 100,000 population: England, Wales & Northern Ireland, April 2003 - June 2003 (voluntary reporting)



* Rates calculated using 2001 mid-year resident population estimates for England, Wales, and Northern Ireland.

has activity against all Gram-positive pathogens (3).

Thirty-eight per cent of reported methicillin resistant (MRSA) isolates were also resistant to ciprofloxacin, while 63% of MRSA reports also reported resistance to erythromycin. Of these, 29% of MRSA isolates were resistant to *both* ciprofloxacin and erythromycin. This compares to only 3% of reported methicillin sensitive isolates (MSSA) with accompanying ciprofloxacin resistance and 8% of MSSA isolates with resistance reported to erythromycin.

Age distribution

Information on the age distribution of patients is not collected as part of the mandatory reporting scheme, and the data reported here have been obtained from the voluntary reporting scheme. For MRSA, the highest age-specific rate was noted in those aged 75 years and over (13.43 per 100,000), followed by the 65 to 74 year age group (5.90/100,000) (figure 4). The rate of methicillin sensitive *Staphylococcus aureus* isolates (MSSA) was higher than the MRSA rate for all the age groups except those aged 75 years and over.

Discussion

In England, Wales, and Northern Ireland, 93%, 78%, and 98% respectively of *S. aureus* bacteraemia reports included methicillin susceptibility information. Methicillin resistance was reported in 50% (47% in 2002) of *S. aureus* bacteraemia reports from Wales, and 40% (38% in 2002) of *S. aureus* bacteraemia reports from Northern Ireland (4).

In England, methicillin resistance was reported in 40% (1120/2806) of *S. aureus* bacteraemias with susceptibility information under the voluntary scheme, and in 39% (1823/4725) under the mandatory scheme. This compares to 44% and 41% respectively from these schemes for the first six months of 2002 (5).

Comparison with previous years under the voluntary scheme suggests that the proportion of *S. aureus* bacteraemias due to MRSA may be stabilising at around 42%, following the rise of MRSA throughout the 1990s. Between April and June 2003, the proportion of *S. aureus* bacteraemias resistant to methicillin below this rate, at 40% of reports under the voluntary scheme and 39% under the mandatory scheme. Therefore, the proportion of *S. aureus* bacteraemias due to MRSA would appear to have stabilised at around 40% in both the mandatory and voluntary reporting schemes. These results compare well with other surveys such as those produced by the British Society for Antimicrobial Chemotherapy (BSAC) (6), and the European Antimicrobial Resistance Surveillance System (EARSS) (7). These data, however, are for one quarter only and it will be of interest to note the proportion of methicillin resistant reports for the remainder of 2003.

The high percentage of reported MRSA isolates with concomitant resistance to ciprofloxacin and erythromycin compared with the same resistances in MSSA is consistent with the MRSA isolates belonging to EMRSA15 and EMRSA16.

The highest population rates of *S. aureus* bacteraemia reports in this quarter were in Northern Ireland (8.82 per 100,000) compared to England (6.13 per 100,000), and Wales (6.11 per 100,000). Using mandatory scheme data, the *S. aureus* bacteraemia reporting rate for England would be 9.61/100,000. The divergence of the voluntary and mandatory reporting rates may reflect under-reporting in England. Over a third more reports of *S. aureus* bacteraemia were received under the mandatory scheme in England than under the voluntary scheme and regional differences in the number of reports between the two schemes ranged from 5% to 72% during the second quarter of 2003 (table 1).

There are still regional discrepancies in the number of bacteraemias reported in England under the voluntary and mandatory schemes and there is clearly a need to address this situation. In particular, there are considerable discrepancies between voluntary and mandatory *S. aureus* bacteraemia reporting from the London region. For most regions, the proportion of MRSA is slightly lower under the mandatory scheme; this would suggest a bias towards reporting MRSA in the voluntary scheme.

The differences highlighted above will need to be addressed in the light of the proposed change in the method for reporting the mandatory *S. aureus* bacteraemia data. Under this proposal, mandatory reporting is to be carried out through the routine reporting scheme, unifying the two separate schemes. This will also bring in additional information in terms of affected age groups and susceptibilities to antimicrobials other than methicillin.

Laboratories are asked to send any isolates suspected to have full or intermediate glycopeptide resistance or resistance to newer anti-staphylococcal agents such as linezolid to the Antibiotic Resistance Monitoring Reference Laboratory (ARMRL) at the

Health Protection Agency, Colindale. Suspect isolates will also be typed at the Laboratory of Health Care Associated Infection (LHCAI) to explore the evolution and spread of new strains.

Acknowledgements

We would like to thank medical microbiologists, infection control teams, and regional Health Protection Agency teams for their efforts in collecting and collating these data and the HPA CDSC Statistics, Modelling, and Economics Division for their expert advice. The Healthcare Associated Infection Surveillance Steering Group was responsible for developing the dataset for the mandatory surveillance scheme.

This report was prepared by the Healthcare-Associated Infection and Antibiotic Resistance Division of CDSC on behalf of the Department of Health. The support of colleagues within the HPA is valued in the preparation of the reports. Feedback is welcome, and should be addressed to Georgia Duckworth, email: <Georgia.duckworth@hpa.org.uk>.

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