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LACORS/HPA collaborative study of raw shell eggs and their use in catering premises

A joint study carried out by the Health Protection Agency and the Local Authority Co-ordinators of Regulatory Services (LACORS) has examined eggs from catering premises in relation to their use and contamination with *Salmonella* spp (1). This is the first UK study to provide such information, and was carried out against a backdrop of a change in the epidemiology of *Salmonella* Enteritidis in England and Wales (2). Foods made with eggs from catering premises have predominated in reports of national and localised foodborne outbreaks of *Salmonella* Enteritidis during 2002 and 2003.

A study carried out by the Food Standards Agency in 2003 provided contemporary information concerning eggs from retail premises. The results from both studies were presented to the 51st Meeting of the Advisory Committee on the Microbiological Safety of Food on the 18 March 2004.

In the LACORS/HPA study, 34,116 eggs (5686 pooled samples of six) were collected from 2104 catering premises (cafés, restaurants, canteens, hotels, residential care homes, public houses, takeaways, bakeries, schools, and hospitals) in April and May 2003. The majority (88%) of eggs sampled were produced in the UK. *Salmonella* spp were isolated from 17 (0.3%) pools of eggs. Of these, 15 were *S. Enteritidis* which were further characterised to Phage Types (PT) as follows: PT6 (0.1%), PT4 (0.07%), PT12 (0.04%), PT1 (0.04%) and PT14b (0.02%). One each of *S. Livingstone* and *S. Typhimurium* Definitive Type (DT) 7 resistant to ampicillin, streptomycin, sulphonamides and tetracycline (DT7 ASSuT) were also isolated.

Compared to a study carried out in 1995/6 (3), the rate of salmonella contamination on or in UK produced eggs appears to have decreased (Rate ratio [RR – 95%] 0.32, 95% Confidence Interval [CI] 0.19 and 0.54*, p 0.00001), a trend mirrored in the rate of *S. Enteritidis* (RR 0.33, 95% CI 0.19 and 0.57, p 0.00005) and, in particular, *S. Enteritidis* PT4 contamination (RR 0.14, 95% CI 0.05 – 0.37, p 0.000009). (table 1). Health Protection Agency data from the public health investigation (PHI) of eggs carried out between November 2002 and January 2004 revealed a salmonella contamination rate of 5.2% (C. Little, *Personal Communication*). This was higher than that of the eggs sampled as part of the current study and probably a reflection that the eggs were sampled as suspect vehicles during outbreak investigations. The PHI revealed that the rate of salmonella contamination on or in eggs imported from Spain (6.7%) or where the country of origin was not known (7.7%) was higher than from eggs produced in the UK (1.6%). *Salmonella* was not recovered from UK Lion Code eggs or eggs originating in Portugal or the United States (C. Little, *Personal Communication*). Eggs imported from Spain have been implicated or confirmed as a source or vehicle of infection in *S. Enteritidis* outbreaks between 2002 (4) and 2004 (5) and current Food Standards Agency advice is that eggs from Spain are to be heat treated (6).

The Food Standards Agency has targeted the catering industry with specific advice to refrigerate eggs, avoid cross contamination from eggs to ready-to-eat (RTE) foods and ensure that eggs are cooked thoroughly (7). It is particularly important that this advice is followed in premises serving vulnerable groups (the very young, the very old, and the immunocompromised). In just over a half (51%) of the premises visited, eggs were stored under refrigerated conditions. Eggs were cracked open in RTE food preparation areas in 60% of premises visited, and eggs were beaten near RTE foods in a third of the premises visited (33%) thus exposing these foods and surfaces to the risk of contamination. About a quarter (26%) of premises served food made with lightly cooked eggs and 3% served foods containing uncooked eggs. Fried/boiled eggs and omelettes were served by the majority (90%) of premises and of these, over half (54%) sometimes or always cooked these dishes lightly. Of concern is that these practices persisted in a small number of premises that served food to vulnerable groups. The role of local authorities is key in ensuring that this centrally issued advice is adopted locally and factored into programmed food hygiene inspections, particularly in premises serving vulnerable groups.

Eggs are a commonly consumed food that may occasionally be contaminated with salmonella at different rates according to their place of origin. Caterers need to be aware of this continuing hazard, adopt appropriate control measures and follow advice provided by the Food Standards Agency (7) in order to reduce the risk of infection.

Table 1 Comparison of *Salmonella* contamination rates in UK Produced eggs in 1995/6 and 2003

Salmonella detail	Year of study and number of salmonella positive pooled samples			
	1995/6(3) (%)* n=13,970		2003 (%)† n=4987	
All salmonellas	138	(1)	16	(0.3)
S. Enteritidis	119	(0.9)	14	(0.3)
S. Enteritidis PT4	82	(0.6)	4	(0.1)
Other S. Enteritidis	37	(0.3)	10	(0.2)

*Eggs sampled from retail premises; † Eggs sampled from catering premises

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Psittacosis associated with a pet shop in Huddersfield

A number of birds infected with *Chlamydophila* (previously known as *Chlamydia*) *psittaci*, which can cause psittacosis in humans, has recently been found in Huddersfield, West Yorkshire, in a branch of a national chain of pet supermarkets. They were diagnosed on 17 December 2003 and came from a single supplier in York. The higher value birds were treated and the remainder destroyed the following day. The pet shop was decontaminated. The company's guidance advises stores to keep records of those who purchase birds so that, in the event of psittacosis being detected, they can be advised to look out for symptoms and seek treatment – this is not necessarily the practice in other pet shops. As a result, one customer was serologically confirmed as having a *C.psittaci* infection and two members of the store's staff presented to their general practitioner.

Psittacosis is an acute generalised chlamydial disease with an incubation period of between one and four weeks. Clinical presentations can be variable, with fever, headache, myalgia, and respiratory symptoms, which are often disproportionately mild compared with the extensive pneumonia seen on chest x-ray. Although usually mild or moderate, disease can be severe especially if left untreated, particularly in the elderly or those with intercurrent illness. Seemingly healthy birds shed organisms in respiratory secretions or faeces, which may remain viable for several months. Transmission of disease is mainly through inhalation of aerosols, respiratory secretions, or dried faecal or feather dust, although oral infection and through handling of infected birds' plumage and tissues have been reported. It does not spread person-to-person.

Since 1998, a number of similar incidents associated with pet supermarkets have occurred, and in smaller retail pet shops, garden centres, and bird fairs. This has taken place against a drop in reported laboratory confirmed cases from 482 in 1994 to about 100 in more recent years. As sero-surveys suggest that both under-diagnosis and under-reporting are common, we would be interested to hear of any current cases connected with pet retailers. Please contact Robert Smith, Zoonoses Surveillance Unit, National Public Health Service for Wales, Communicable Disease Surveillance Centre; tel: 029 20 521997, fax: 029 20 521987, email: <robert.smith@nphs.wales.nhs.uk>.



World TB Day, 24 March 2004, 'Every breath counts – stop TB now!'

World TB Day is held each year on 24 March, in recognition of Robert Koch's presentation on this day in 1882 that the tubercle bacillus could be found in the sputum of tuberculosis patients. The aim is to promote awareness and knowledge for action against tuberculosis. World Health Organization (WHO) projections suggest that there will be approximately 150 million cases and 36 million deaths from tuberculosis between 2002 and 2020 <<http://www.who.int/gtb>>. One third of the world's human inhabitants are currently infected with tuberculosis and each year there are eight million new cases, and two million people die, even though tuberculosis is a curable disease. The breakdown in health services, the spread of HIV/AIDS, and the emergence of multidrug-resistant tuberculosis are exacerbating the impact of this disease. The *Stop TB Partnership*, a global association that has focused on direct advocacy for resource mobilisation and strengthening political and governmental commitment, is now aiming to intensify its efforts, which are specifically directed at engendering greater public commitment and participation in tuberculosis control/elimination <<http://www.stoptb.org>>.

In England, Wales, and Northern Ireland the number of cases and tuberculosis rate continued to increase in 2002 (enhanced TB surveillance preliminary results). Six thousand nine hundred and seventy-four cases were reported in 2002, which represents an overall rate of 12.8 per 100,000 population. Although the United Kingdom (UK) is considered to be a low incidence country, there is considerable regional and local variation across the country and within subgroups of the population. In 2001, the tuberculosis rate was below 20/100,000 in 89% of the 376 local authorities of England and Wales, but was between 20 and 40 in 8%, and reached over 40/100,000 in 3% of local authorities, mainly in London and Leicester. High tuberculosis rates in London, as in some other cities, may be due to the concentration of population subgroups at higher risk of tuberculosis such as migrants from high-prevalence countries and the homeless. In England, Wales, and Northern Ireland, people born outside the UK represented 63% of the tuberculosis cases in 2001, and were 19 times more likely to have tuberculosis than those born in the UK.

The level of multi-drug resistance is relatively stable in the UK (0.8% in 2001), while the proportion of isoniazid resistance slightly increased in 2001 (6.7%). This increase was mainly due to an outbreak in London that was first recognised in early 2000, with the first case identified retrospectively as being in 1995 (1).

The final report on tuberculosis cases reported in the UK in 2001 and a summary preliminary report on 2002 cases will be available in the tuberculosis section of the HPA website at <http://www.hpa.org.uk/infections/topics_az/tb/menu.htm>, with an update of the detailed epidemiological data from the surveillance systems co-ordinated from the Health Protection Agency's Communicable Disease Surveillance Centre.

References

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Isoniazid mono-resistant tuberculosis in north London – update

An outbreak of Isoniazid mono-resistant tuberculosis (TB) in north London was first recognised in 1999-2000, when most cases started to appear. The earliest case was in 1995 (diagnosed retrospectively) (1-4). Molecular typing has shown that all cases are caused by the same strain of TB. One hundred and sixty-four cases have so far been reported in this outbreak, which is mainly focussed in north London. One hundred and thirty-seven cases were diagnosed in London, and 27 outside London. Many of the cases have complex needs, and there are strong associations with drug use and prison detention. These and other factors, such as homelessness, present substantial challenges to treatment.

Outcomes

At least half of the cases have shown poor adherence to treatment. Forty-eight per cent have so far completed treatment. In London, 19 of the 137 cases (14%) have been lost to follow-up. Of the 33 still on treatment, 18 (55%) have poor adherence.

There are five cases of multi-drug resistant TB (MDR-TB). Four are the result of poor adherence to treatment. The fifth case in a schoolgirl aged 15 years is of most concern, as there is evidence of likely transmission of MDR-TB in the community from another case (S) who had acquired rifampicin resistance. There are no known direct links between them, but contact tracing is ongoing. Molecular typing, however, shows the same mechanism of rifampicin resistance in both cases. This profile is shared by only five per cent of rifampicin-resistant strains. Case S has been infectious for long periods. She has also infected her young child, who has a clinical diagnosis of tuberculous infection and is being treated as MDR-TB.

Since the start of the incident, there have been two TB-related deaths, and an additional three deaths from other causes.

Ongoing investigation and management

Ensuring treatment completion remains a challenge in this incident. The Incident Control Committee (ICC) is working with north London TB networks to identify additional measures and to allocate the resources necessary to achieve treatment completion in this complex patient group. An update report is available from HPA-London Regional Epidemiology Services.

Following the community-acquired MDR-TB, the microbiological investigation in London will be extended. The Health Protection Agency's Mycobacterium Reference Unit (MRU) in Dulwich will continue to type isoniazid mono-resistant isolates from London tuberculosis cases. In addition, the MRU will type MDR-TB isolates from north London.

New cases continue to be identified in prisons both inside and outside London. The ICC is working with prisons, Primary Care Trusts, and Health Protection Units to identify and manage these cases.

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Protecting the blood supply from variant CJD: deferral of donors who have received a blood transfusion

The Department of Health has announced that people who have received a blood transfusion in the UK since 1 January 1980 will no longer be able to donate blood (1,2). This additional donor selection criterion will be implemented by all four of the United Kingdom Blood Services (UKBS) including the National Blood Service (NBS), on 5 April 2004.

This additional precautionary measure to safeguard the blood supply is being taken in the light of the first possible transmission of variant Creutzfeldt-Jakob Disease (vCJD) by blood transfusion which was reported in December 2003 (3). The transfusion occurred in 1996; the blood donor was well at the time but developed symptoms of vCJD in 1999 and died the following year. The recipient was diagnosed with vCJD in 2003.

Since 1997, in view of the uncertainty as to whether vCJD could be transmitted by blood or blood products, the UKBS have put in place a number of other measures to reduce the risk of a potential onward cycle of transmission. These include:

- The withdrawal and recall of any blood components, plasma derivatives, or tissues obtained from any individual who later develops vCJD (December 1997)
- The importation of plasma from the United States for fractionation to manufacture plasma derivatives (announced May 1998, implemented October 1999)
- Leucodepletion (removal of white blood cells) of all blood components (announced July 1998, implemented Autumn 1999)
- Importation of fresh frozen plasma from the United States (US) for patients born on or after 1 January 1996 (announced August 2002, to be implemented spring 2004)
- Promotion of appropriate use of blood and tissues and alternatives throughout the NHS.

This is a highly precautionary approach and the benefit of receiving a blood transfusion when needed far outweighs any possible risk of contracting vCJD. To date, there has been only one possible case of vCJD being transmitted by blood, although the NBS issues over 2.5 million units of blood components every year.

As of 1 March 2004 there have been 146 definite and probable cases of vCJD in the UK, six cases in France, and one in each of Canada, Hong Kong, the Irish Republic, Italy, and the United States. The eventual number of individuals within the UK population likely to develop vCJD remains uncertain; current estimates range from current numbers up to 540. It is not known what number of current or past blood, or tissue donors, may develop vCJD in the future.

UK Blood Services can offer further information and advice to blood donors on 0845 7711 711.

NHS Direct can offer advice and information to members of the public who are concerned about the risk of contracting vCJD from a blood transfusion on 0845 4647.

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Bacteraemia

Last updated: **18 march 2004**Next update due: **22 April 2004**

[Staphylococcus aureus bacteraemia: England, Wales, and Northern Ireland: October to December 2003](#)

Staphylococcus aureus bacteraemia: England, Wales, and Northern Ireland: October to December 2003

Key points:

- Laboratories in England reported 3699 *Staphylococcus aureus* bacteraemia isolates between October and December 2003 through the voluntary reporting scheme*. More than 1000 additional *S. aureus* reports (4941) were made via the mandatory reporting scheme†. This equates to a discrepancy of 25%. The trends in mandatory and voluntary reporting of *S. aureus* are considered in the discussion.
- There were 164 and 140 voluntary reports of *S. aureus* bacteraemia isolates from laboratories in Wales and Northern Ireland respectively for the same time period.
- Ninety-three per cent of voluntary reports from England contained information on susceptibility to methicillin. Methicillin resistance in Wales and Northern Ireland (voluntary reporting) was noted in 51% and 41% of *S. aureus* bacteraemia reports respectively. In England, 41% of *S. aureus* bacteraemias were due to methicillin resistant *Staphylococcus aureus* (MRSA) under the voluntary scheme and 40% of *S. aureus* isolates reported under the English mandatory scheme were resistant to methicillin.
- No confirmed reports of vancomycin or linezolid resistance in *S. aureus* bacteraemias were received during this period and there was just one report of teicoplanin resistance.
- These data do not distinguish between hospital-acquired and community-acquired infections, nor in which healthcare setting they may have been acquired or whether they were acquired in the United Kingdom (UK).

* Voluntary reporting: undertaken by most laboratories in England, Wales, and Northern Ireland 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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Diary

Last updated: **18 March 2004**

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[Immunisation training at HPA Colindale - May/June 2004](#)



Immunisation training at HPA Colindale - May/June 2004

The Health Protection Agency's Immunisation Department will be running two immunisation study days at Colindale this year:

1.18 May 18 – “Scientific issues in immunisation”

This day will include presentations by national experts on the current control and epidemiology of several vaccine preventable diseases. Vaccine development, efficacy, and policy will also be discussed with presentations including varicella vaccination, the current control of measles, mumps, and rubella (MMR), the effects of the Hib booster campaign on Hib disease, monitoring polio in the post-certification era, current issues in TB and influenza, and the surveillance and prevention of pneumococcal disease.

2. 28 June 28 – “Immunisation training for PCT immunisation leads”

This day is specifically designed for those people now leading in immunisation for their Primary Care Trust (PCT). To reflect the fact that many PCT leads may be relatively new to their role and also to many of the areas in immunisation for which they are now responsible. This day will include presentations about the role of the immunisation lead, which areas of immunisation to audit, the COVER programme, managing the child health computer system, management of vaccine preventable disease outbreaks, consent and Patient Group Directions, and planning and providing immunisation training.

For further details and registration, contact Training Co-ordinators Vivienne Fitch, te: 020 8200 6868 ext. 4569 <Vivienne.Fitch@HPA.org.uk> and Yvette Howell 020 8200 6868 ext 4427 <Yvette.Howell@HPA.org.uk> or Laura Lane, Immunisation training and advice nurse on 020 8200 6868 ext 4680 <Laura.Lane@HPA.org.uk>.

Staphylococcus aureus bacteraemia: England, Wales, and Northern Ireland: October to December 2003

Key points:

- Laboratories in England reported 3699 *Staphylococcus aureus* bacteraemia isolates between October and December 2003 through the voluntary reporting scheme*. More than 1000 additional *S. aureus* reports (4941) were made via the mandatory reporting scheme†. This equates to a discrepancy of 25%. The trends in mandatory and voluntary reporting of *S. aureus* are considered in the discussion.
- There were 164 and 140 voluntary reports of *S. aureus* bacteraemia isolates from laboratories in Wales and Northern Ireland respectively for the same time period.
- Ninety-three per cent of voluntary reports from England contained information on susceptibility to methicillin. Methicillin resistance in Wales and Northern Ireland (voluntary reporting) was noted in 51% and 41% of *S. aureus* bacteraemia reports respectively. In England, 41% of *S. aureus* bacteraemias were due to methicillin resistant *Staphylococcus aureus* (MRSA) under the voluntary scheme and 40% of *S. aureus* isolates reported under the English mandatory scheme were resistant to methicillin.
- No confirmed reports of vancomycin or linezolid resistance in *S. aureus* bacteraemias were received during this period and there was just one report of teicoplanin resistance.
- These data do not distinguish between hospital-acquired and community-acquired infections, nor in which healthcare setting they may have been acquired or whether they were acquired in the United Kingdom.

* Voluntary reporting: undertaken by most laboratories in England, Wales, and Northern Ireland 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.

Introduction

This report covers *Staphylococcus aureus* bacteraemias over the fourth quarter of 2003 (October to December) under the voluntary (routine communicable disease reporting by laboratories) and mandatory bacteraemia reporting schemes. These bacteria were isolated from blood cultures with or without cerebrospinal fluid, by laboratories across England, Wales, and Northern Ireland. Wales and Northern Ireland do not participate in the mandatory *S. aureus* surveillance scheme. Rates were calculated using 2002 mid-year resident population estimate denominators for each region. Regional analyses were performed using the English regional boundaries introduced in April 2002.

Staphylococcus aureus

In the three month period October to December 2003, 4003 reports of *S. aureus* bacteraemia were received through the voluntary reporting scheme in England (3699), Wales (164), and Northern Ireland (140) (table 1 and figure 1). Under the mandatory surveillance scheme, there were 4941 *S. aureus* bacteraemia reports from England. Wales and Northern Ireland do not participate in the mandatory MRSA surveillance scheme.

Among the English regions, Yorkshire and Humberside had the highest number of reports under the voluntary scheme (566) and London had the highest number of reports under the mandatory scheme (988).

The fewest number of reports were received from the North East (250 voluntary and 261 mandatory). London had the largest disparity (60%) in reports made under the voluntary and mandatory schemes, with 593 more reports under the mandatory scheme. The West Midlands and North East regions both had the smallest discrepancy between voluntary and mandatory reporting with just 4% more reports made under the mandatory scheme (table 1 and figure 1).

The overall reporting rate of *S. aureus* bacteraemia for England, Wales, and Northern Ireland was 7.4 per 100,000 population for this three month period, based on voluntary reporting (figure 2). Northern Ireland had the highest rate (8.3/100,000 population) followed by England (7.5/100,000 population), and Wales (5.6/100,000 population). Reporting rates within England ranged from 5.4/100,000 population in London to 11.4/100,000 population in Yorkshire and Humberside.

Antimicrobial susceptibility

All reports made under the mandatory surveillance scheme in England include methicillin susceptibility data, whereas 93% of voluntary reports in England included this information (table 1). Of the voluntary reports made from Wales and Northern Ireland, 88% and 89% respectively included methicillin susceptibility data. The proportion of *S. aureus* reports without methicillin susceptibility information was

Figure 1 *Staphylococcus aureus* bacteraemia reports and methicillin susceptibility data, England, Wales, and Northern Ireland: October to December 2003*

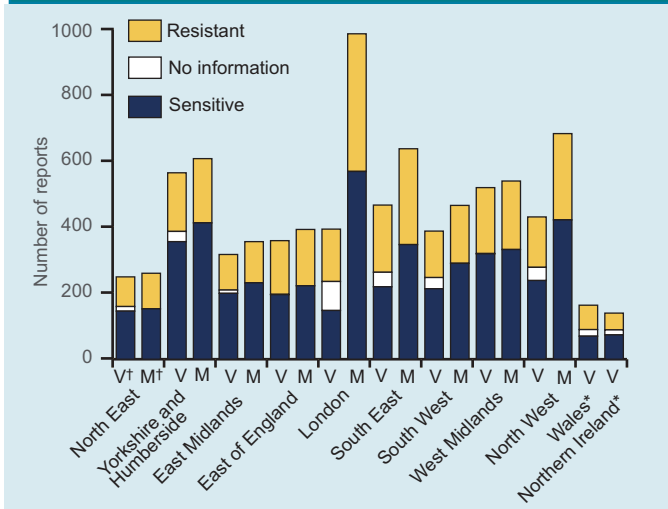
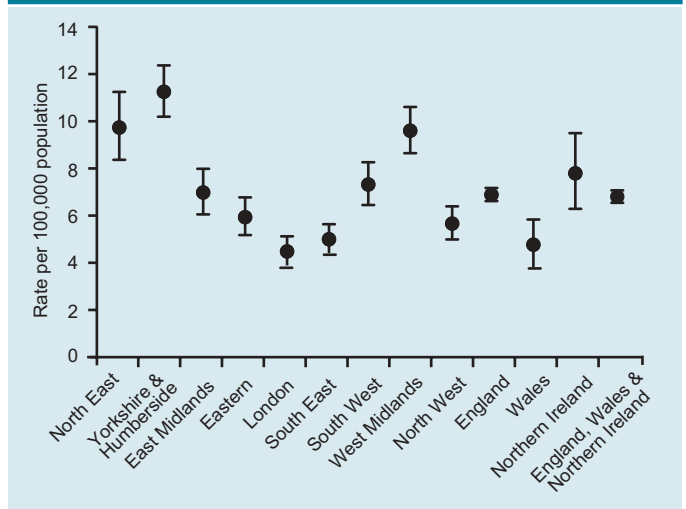


Figure 2 *Staphylococcus aureus* bacteraemia voluntary reporting rates* per 100,000 population (95% confidence intervals), England, Wales, and Northern Ireland: October to December 2003



*Wales & Northern Ireland do not take part in the English mandatory surveillance scheme; †V = Voluntary, M = Mandatory.

*rates calculated using 2002 mid-year resident population estimates.

Table 1 *Staphylococcus aureus* bacteraemia reports and methicillin susceptibility data*, England, Wales, and Northern Ireland: October to December 2003

Region	Reporting scheme	Resistant	Sensitive	No information	(%†)	Total	(% Difference‡)
North East	Voluntary	90	146	14	6	250	4
	Mandatory	108	153	–	–	261	
Yorkshire & Humberside	Voluntary	178	357	31	5	566	7
	Mandatory	195	414	–	–	609	
East Midlands	Voluntary	108	200	10	3	318	11
	Mandatory	125	232	–	–	57	
East of England	Voluntary	163	196	1	0.3	360	9
	Mandatory	171	223	–	–	394	
London	Voluntary	159	148	88	22	395	60
	Mandatory	418	570	–	–	988	
South East	Voluntary	204	220	44	9	468	27
	Mandatory	291	348	–	–	639	
South West	Voluntary	141	214	34	9	389	405
	Mandatory	176	291	–	–	467	
West Midlands	Voluntary	200	320	1	0.2	521	4
	Mandatory	208	333	–	–	541	
North West	Voluntary	153	239	40	9	432	37
	Mandatory	262	423	–	–	685	
England	Voluntary	1396	2040	263	7	3699	25
	Mandatory	1954	2987	–	–	4941	
Wales§	Voluntary	74	70	20	12	164	
Northern Ireland§	Voluntary	51	74	15	11	140	
England, Wales, & Northern Ireland	Voluntary	1521	2184	298	7	4003	

*provisional data; †No information as a percentage of total reports; ‡Percentage difference between voluntary and mandatory reporting schemes; § Wales and Northern Ireland do not take part in the English mandatory surveillance scheme.

was highest in reports from London (22%), the North West (9%), South West (9%), and South East regions (9%). The lowest proportion was in the West Midlands and East of England regions (<1% respectively).

Forty-one per cent of reports of isolates with methicillin susceptibility information (1396/3436) under the voluntary laboratory reporting scheme for England were resistant to methicillin. This compares to 51% of reports from Wales (74/144) and 41% of reports from Northern Ireland (51/125) (table 1 and figure 3). Of the 4941 reports made via the mandatory scheme in England, 1954 (40%) isolates were reported as resistant to methicillin.

London had the highest percentage of methicillin resistant *S. aureus* (MRSA) isolates reported under the voluntary scheme (52%) and the South East had the highest percentage of MRSA isolates reported under the mandatory scheme (46%) in England (figure 3). Yorkshire and Humberside had the lowest proportion of methicillin resistant isolates (33% voluntary and 32% mandatory).

There was little variation in the proportion of *S. aureus* bacteraemia isolates resistant to methicillin between the two schemes in the East Midlands (<1%), West Midlands (<1%), the North West (1%), and Yorkshire and Humberside (1%) (figure 3). In London, however, voluntary reporting indicated a 10% higher rate of methicillin resistance than mandatory reporting.

Of the reports that included susceptibility data for other antimicrobials, 56% of isolates were reported as resistant to ciprofloxacin, and 38% as resistant to erythromycin. Less than 10% resistance was reported

Table 2 *Staphylococcus aureus* bacteraemia reports (voluntary reporting*) and susceptibility data: England, Wales, and Northern Ireland: October to December 2003

	Resistant	(%)†	Sensitive	No information	(%)‡
Ciprofloxacin	728	56	561	2714	68
Erythromycin	1150	38	1848	1005	25
Fusidic acid	244	9	2420	1399	33
Gentamicin	130	5	2670	1203	30
Mupirocin	69	5	1339	2595	65
Rifampicin	41	2	1752	2210	55
Vancomycin	–	–	2551	1452	36
Teicoplanin	1	0.1	1332	2670	67
Linezolid	–	–	164	3839	96

*This information is not available under the mandatory surveillance scheme.

†R as a percentage of R+S.

‡No information as a percentage of total reports.

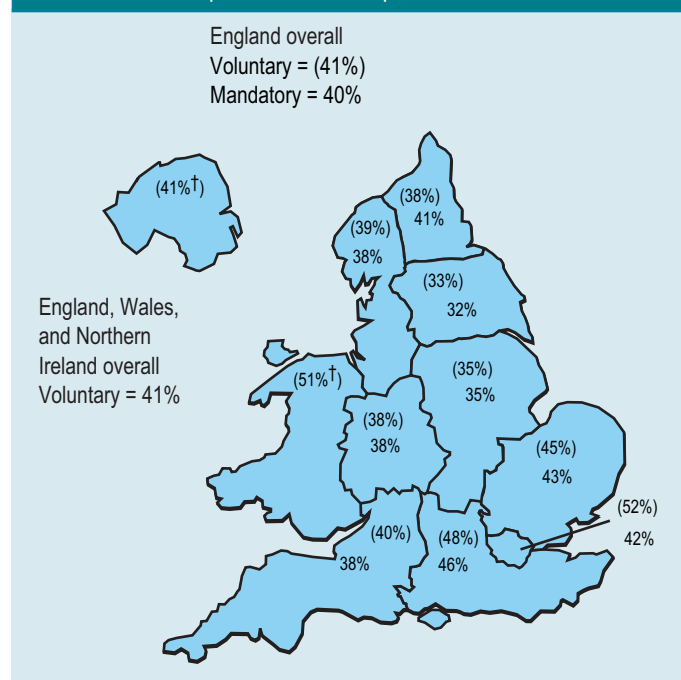
to the remaining antibiotics listed in table 2.

No confirmed reports of vancomycin or linezolid resistance in *S. aureus* bacteraemias were received during this period and there was just one report of teicoplanin resistance.

Age distribution

The age-specific rate of MRSA (figure 4) was highest in the over 75 years age group (16.8 per 100,000 population), followed by the 65 to 74 years age group (7.3 /100,000), and the under 1 year age group (3.0/100,000). This information is only obtainable from the voluntary reporting scheme and it is not included in the mandatory dataset. The proportion of

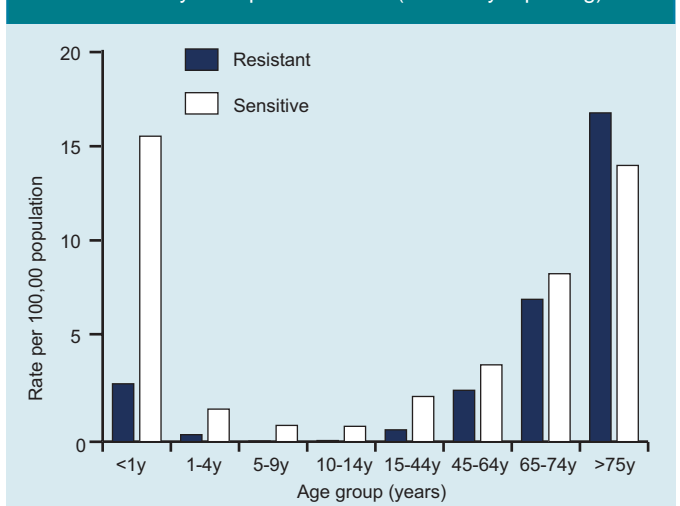
Figure 3 Methicillin resistance in *Staphylococcus aureus* bacteraemia reports*, England, Wales, and Northern Ireland: October to December 2003. MRSA as a percentage of isolates whose susceptibilities were reported



* provisional data.

† Wales and Northern Ireland have separate mandatory surveillance schemes.

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



*rates calculated using 2002 mid-year resident population.

methicillin sensitive *S. aureus* (MSSA) was higher than MRSA for all age groups except the over 75 years age group.

Discussion

S. aureus bacteraemia reports made from October to December 2003, from both the voluntary and mandatory reporting schemes, are presented here to allow comparison with earlier reports. Caution should be exercised when interpreting data from a short time period. The data obtained under both schemes (voluntary and mandatory) have been analysed here as the voluntary scheme includes additional information such as age and gender. No distinction is made between community and hospital-acquired bacteraemias in this analysis, nor is there data to identify the location where the infection was acquired.

Where voluntary and mandatory reporting from England are compared, there is a 25% disparity with 1242 less reports in the voluntary reporting. There was, however, little difference in the overall proportion of *S. aureus* bacteraemias due to MRSA in England under the two schemes, which was 41% under the voluntary scheme and 40% under the mandatory scheme. These figures were very similar when compared to data from the previous report (1), where 39% of reports made under both voluntary and mandatory schemes were reported with methicillin resistance. These results compare well with other surveys such as those produced by the British Society for Antimicrobial Chemotherapy (BSAC) (2) and the European Antimicrobial Resistance Surveillance System (EARSS) (3), and strengthens the observations made in the previous reports that the proportion of *S. aureus* due to MRSA appears to have stabilised at approximately 40% (1,4).

In England, Wales, and Northern Ireland, 93%, 88%, and 89% respectively of voluntary *S. aureus* reports included data on methicillin susceptibility. Ninety-three per cent of voluntary reports contained methicillin susceptibility information, which compares to 93% for the same period of 2002, and 92% for the preceding quarter of 2003 (1). All mandatory reports included methicillin susceptibility data.

There remains a wide range in the reporting rate per 100,000 population for the voluntary reporting scheme (5.4-11.4 per 100,000 population). This may be due to a number of factors, including regional differences in rates of MRSA and methodological differences in reporting such as the use of electronic data capture.

The rate of mandatory *S. aureus* reports is 10.0/100,000 population for England. This rate is considerably higher than the rate of voluntary reports (7.5/100,000 population), suggesting under-reporting of *S. aureus* bacteraemias under the voluntary scheme. In London the mandatory reporting rate is 13.4/100,000 compared to a voluntary reporting rate of 5.4/100,000 population.

Although 93% of voluntary *S. aureus* reports included data on methicillin susceptibility, only 32% of these reports included ciprofloxacin susceptibility data and 75% included susceptibility data for erythromycin.

Forty-one per cent of MRSA isolates were reported with concomitant resistance to ciprofloxacin, and 62% of such isolates were reported with concomitant resistance to erythromycin. This compares to 4.9% of MSSA reports with concomitant ciprofloxacin resistance and 8.4% with concomitant erythromycin resistance. The higher percentage of ciprofloxacin and erythromycin resistance in MRSA isolates compared to MSSA isolates is consistent with the MRSA isolates belonging to EMRSA15 and EMRSA 16, which account for the majority of MRSA isolates in England and which differ in their antimicrobial susceptibilities and treatment options (1,4,5).

Susceptibility data for other antimicrobials was weak and the incomplete information makes comparisons with previous data and analyses difficult. There were no confirmed reports of vancomycin or linezolid-resistant isolates from bacteraemias and only one report of teicoplanin resistant isolates.

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 Health Protection Agency's Antibiotic Resistance Monitoring Reference Laboratory (ARMRL), Colindale. Suspect isolates will also be typed at the Health Protection Agency's Laboratory of Healthcare Associated Infection (LHCAI) to explore the evolution and spread of new strains.

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These reports would not be possible without the enduring weekly contributions from microbiology colleagues in laboratories across England and Wales, and Northern Ireland, without which there would be no surveillance data. This is your data, so please tell us what you would like done with it. We are always pleased to hear your views. Please send your comments/feedback to Andrew Pearson <andrew.pearson@hpa.org.uk> or Allison Lee <allison.lee@hpa.org.uk>. The support from colleagues within the HPA, Specialist and Reference Microbiology Division in particular, is valued in the preparation of the reports. These contributions are greatly appreciated.

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