CDR WEEKLY

the Communicable Disease Report Weekly

Current Issue: Volume 15 Number 25 **Published on:** 23 June 2005

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- Publication of data from the first four years of the mandatory surveillance of MRSA bacteraemia data on the DH and HPA websites
- A strategy for the prevention and control of healthcare associated infections (HCAI) in Northern Ireland 2005-2010
- Pneumococcal outbreak in a London care home

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News

- Publication of data from the first four years of the mandatory surveillance of MRSA bacteraemia data on the DH and HPA websites
- Pneumococcal outbreak in a London care home
- A strategy for the prevention and control of healthcare associated infections (HCAI) in Northern Ireland 2005-2010

Publication of data from the first four years of the mandatory surveillance of MRSA bacteraemia data on the DH and HPA websites

The results for the first four years of the Department of Health's mandatory *Staphylococcus aureus* (including MRSA) surveillance system in acute Trusts in England have been published on the Department of Health and Health Protection Agency websites.

MRSA bacteraemia numbers and rates by individual Trusts are now available for each six month period from October 2005 to March 2005, on the Department of Health website at: <www.dh.gov.uk>. The Health Protection Agency's website contains a summary of the national and regional reports submitted to the HPA on behalf of the Department of Health <http://www.hpa.org.uk/infections/topics_az/staphylo/data.htm>. There is also a report on the first four years of the *S. aureus* mandatory surveillance scheme in this issue of *CDR Weekly* (see Bacteraemia section).

Saving Lives Launch
The Department of Health have launched a new delivery programme to reduce healthcare associated infection (HCAI) including MRSA.

The strategy includes a delivery programme aiming to support NHS Trusts in reducing healthcare associated infections such as MRSA, which emphasises the changes in the acute hospital setting as a priority area. The programme is designed to help Trusts embed infection control across each ward, department or unit, through the use of clinical interventions and an action planning tool. There are five high-impact interventions at the heart of the programme. These are simple evidence based tools that reinforce the practical actions clinical staff need to take to significantly reduce HCAI.

Further information on Saving Lives can be found at:
<http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/HealthcareAcquiredInfection/HealthcareAcquiredGeneral
Information/SavingLivesDeliveryProgramme/fs/en>.

Public Accounts Committee Report: Improving Patient Care by Reducing the Risk of Hospital Acquired Infection
The House of Commons' Committee of Public Accounts has published the report Improving Patient Care by Reducing the Risk of Hospital Acquired Infection: a progress report. This examined the progress made by the Department of Health and NHS Trusts in reducing the risks of hospital acquired infection since the original report by the Comptroller and Auditor General on this topic in 2000. The Committee is critical of progress made in implementing many of its predecessor's recommendations in terms of extending surveillance of hospital acquired infection, ward cleanliness, compliance with hand hygiene improving isolation facilities, and reducing bed occupancy rates.

Further information on this Public Accounts Committee report can be found at

<http://www.parliament.uk/parliamentary_committees/committee_of_public_accounts/committee_of_public_accounts_reports
_and_publications.cfm>.

A strategy for the prevention and control of healthcare associated infections (HCAI) in Northern Ireland 2005-2010

The Northern Ireland Department of Health, Social Services and Public Safety (DHSSPS) has published a major strategic report to co-ordinate, underpin and enhance arrangements for the prevention and control of healthcare associated infections (HCAI), particularly those associated with hospitals.

The report builds on a range of initiatives which had been undertaken in recent years in Northern Ireland and which have included: Controls Assurance Standards in infection control; the introduction of mandatory surveillance of MRSA bacteraemia, *Clostridium difficile* and orthopaedic surgical site infection; and the development of infection control training materials. Development of the strategy involved evaluating current regional and Trust HCAI surveillance programmes and consultation with front line clinical staff, Trust medical directors, infection control teams, Consultants in Communicable Disease Control, Directors of Public Health and the Health and Social Services Councils who represent the interests of the public. The strategy was also informed by approaches taken by the other United Kingdom health departments and evidence of good practice from elsewhere.

Key elements in the strategy:

- Infection prevention and control is recognised as everyone's business and cannot be the sole responsibility of the infection prevention and control team;
- The prevention and control of HCAI is to be embedded in Trust accountability and governance arrangements;
- Trusts will be required to produce an Annual Infection Reduction Plan, to be agreed with the Health and Social Services Board and submitted to the DHSSPS by the Trust Chief Executive. This will include evidence of progress over the past 12 months and contain measurable outcome targets reflecting the Trust's priorities;
- HCAI surveillance programmes are to be further developed and enhanced. To support this, Trusts will designate a surveillance coordinator to liaise with divisional leads, link nurses, the infection prevention and control team, and frontline clinical staff;
- Infection prevention and control training will be made mandatory for all Trust staff;
- The need for more effective public engagement is recognised with Trusts being required to demonstrate patient/public involvement in their HCAI reduction plans;

The strategy has been issued for a three month public consultation period and is available from the DHSSPS website at < http://www.dhsspsni.gov.uk/publications/2005/prevention-of-HCAIs.pdf >.

References

1. European Academies Science Advisory Council. *Infectious diseases – importance of co-ordinated activity in Europe*. London: The Royal Society, 2005. Available at <http://www.easac.org/publications.htm#pubs>.

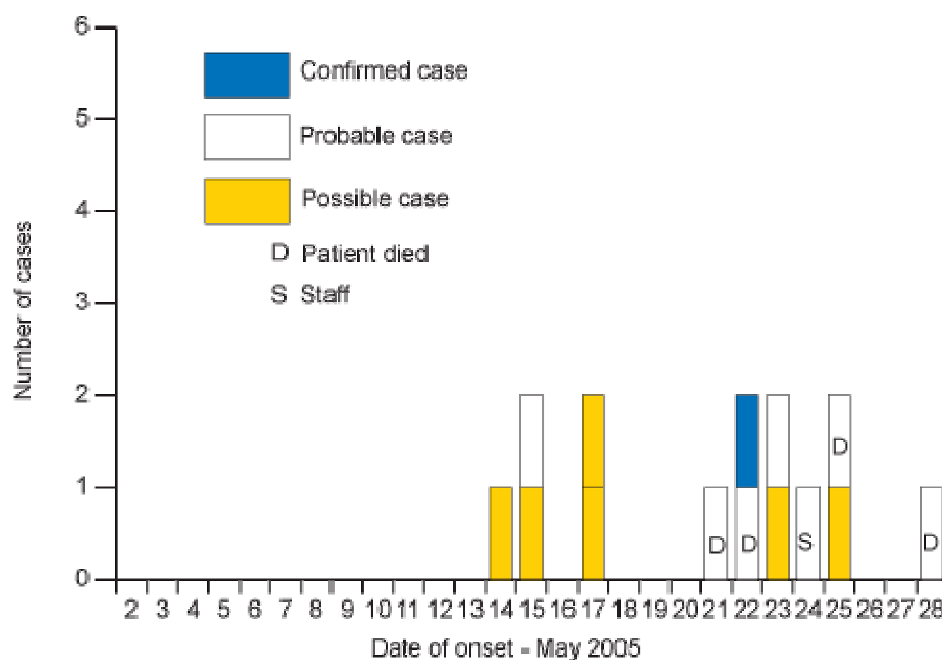
Pneumococcal outbreak in a London care home

Between 14 and 28 May 2005, one member of staff and seven of 35 residents of an old people's residential care home developed respiratory infections with fever and respiratory symptoms. Four residents subsequently died. The Health Protection Unit (HPU) was informed on 1 June 2005 and investigated the incident with the assistance of local general practitioners, environmental health officers and the medical microbiologist from the local acute Trust.

Three residents had urine tests for legionella and pneumococcal serology. All three tested negative for Legionella antigen and two tested positive for pneumococcal antigen, suggesting that the organism causing the infections was the bacterium Streptococcus pneumoniae.
The following case definitions were used:

> Confirmed case: microbiological confirmation of pneumococcus in a resident or staff member developing fever and respiratory symptoms from 1 May 2005.
> Probable case: resident or member of staff developing fever and respiratory symptoms from 1 May 2005
> .Possible case: resident or staff member developing respiratory symptoms, but NO fever, from 1 May 2005.
> One confirmed case, seven probable, and six possible cases were identified.

Figure 1 Date of onset of respiratory illness among cases (n=14). Care home in London in May 2005



Of the 35 elderly residents, only four had previously been vaccinated against pneumococcus (including one confirmed and two possible cases). Control measures included temporary closure to new admissions while this incident was being investigated, and pneumococcal vaccination for all residents and members of staff in risk groups. Management at the care home was advised on infection control measures and information provided to staff, residents, and relatives. The last case occurred more than two weeks ago. The HPU was satisfied that all necessary control measures had been instituted and the home was allowed to reopen.

This outbreak clearly highlights the importance of vaccination for at risk communities, such as those at care homes.

References

1. CDC. Outbreak of Pneumococcal Pneumonia Among Unvaccinated Residents of a Nursing Home, New Jersey, April 2001. MMWR. 2001;50:707-10. Available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5033a3.htm>.
2. Nuorti JP, Butler JC, Crutcher JM, Guevara R, Welch D, Holder P, *et a*l. An outbreak of multidrug-resistant pneumococcal pneumonia and bacteremia among unvaccinated nursing home residents. *N Engl J Med* 1998; **338**(26):1861-8. Available at <http://content.nejm.org/cgi/content/short/338/26/1861>..

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Immunisation

- Laboratory reports of invasive meningococcal infections, England and Wales: weeks 01-05/05
- Laboratory reports of invasive meningococcal infections, England and Wales: weeks 06-10/05
- Laboratory confirmed cases of pertussis infection England and Wales: January to December 2004
- COVER programme: January to March 2005
- Laboratory confirmed cases of measles, mumps, and rubella, England and Wales: January to March 2005

Laboratory reports of invasive meningococcal infections, England and Wales: weeks 01-05/05

	Method of diagnosis			Total reports	Cumulative*
	CSF and blood Culture	Non-culture	Other sites	01-05/05	Total to week 05/2005
Group A	1	–	–	**1**	**1**
B	107	139	5	**251**	**251**
C	2	2	1	**5**	**5**
W135	2	2	–	**4**	**4**
X	–	–	–	**–**	**–**
Y	6	1	–	**7**	**7**
Z	–	–	–	**–**	**–**
29E	–	–	–	**–**	**–**
Ungroupable	–	–	–	**–**	**–**
Ungrouped	–	9	–	**9**	**9**
Total	**118**	**153**	**6**	**277**	**277**

*Combined CDSC data and Meningococcal Reference Unit data latex antigen, microscopy, polymerase chain reaction.

Laboratory reports of invasive meningococcal infections, England and Wales: weeks 06-10/05

	Method of diagnosis			Total reports	Cumulative*
	CSF and blood Culture	Non-culture	Other sites	06-10/05	Total to week 10/2005
Group A	–	–	–	**–**	**1**

B	58	103	19	**180**	**431**
C	2	1	–	**3**	**8**
W135	3	3	–	**6**	**10**
X	–	–	–	**–**	**–**
Y	5	–	–	**5**	**12**
Z	–	–	–	**–**	**–**
29E	–	–	–	**–**	**–**
Ungroupable	–	–	–	**–**	**–**
Ungrouped	–	16	–	**16**	**25**
Total	**68**	**123**	**19**	**210**	**487**

*Combined CDSC data and Meningococcal Reference Unit data latex antigen, microscopy, polymerase chain reaction.

Laboratory confirmed cases of pertussis infection England and Wales: January to December 2004

Table 1 Laboratory confirmed cases of pertussis infection England and Wales by age group: January to December 2004*

Age Group	PCR and/or serology only	Culture	Total
<3 months	2	20	**22**
3-5 months	1	8	**9**
6-11 months	2	2	**4**
1-4 years	1	3	**4**
5-9 years	5	–	**5**
10-14 years	5	–	**5**
≥15 years	29	1	**30**
Not known	–	–	**–**
Total	**45**	**34**	**79**

* All data are provisional

Since January 2002, infants ≤6 months of age with suspected pertussis have been offered PCR testing through the Health Protection Agency's Respiratory and Systemic Infecions Reference Laboratory (RSIL). Adults with a cough persisting for more than 21 days and children with a cough persisting for more than 14 days, have been offered serology testing through RSIL. These cases are likely to have been culture negative, and testing with PCR and/or serology have increased case ascertainment.

Table 2 Laboratory confirmed cases of pertussis infection in England and Wales: January to December 2004*

Quarter 2003	PCR and/or serology only	Culture	PCR/serology reports as a % of total	Total
Jan to Mar	11	14	44%	25

Apr to Jun	55	27	67%	82
Jul to Sept	53	42	56%	95
Oct to Dec	45	34	57%	79

*All data are provisional.

The apparent increase particularly in adult cases is explained by the availability of enhanced diagnostic methods, which have been increasingly used during the year, as illustrated by the increasing proportion of reports diagnosed by PCR and or serology.

COVER programme: January to March 2005

Quarterly vaccination coverage statistics for children aged up to five years in the United Kingdom.

This report of the Cover of Vaccination Evaluated Rapidly (COVER) programme presents quarterly coverage data for children in the United Kingdom (UK) who reached their first, second, or fifth birthday during the evaluation quarter, January to March 2005.

Children who reached their first birthday in the quarter would have been scheduled to receive their third dose primary vaccinations (third dose diphtheria, tetanus, pertussis (DTP vaccine), *Haemophilus influenzae* type b (Hib vaccine), polio vaccine, and MenC vaccine) between May and July 2004. Children who reached their second birthday would have been scheduled to receive their third dose primary vaccinations between May and July 2003 and first measles, mumps, and rubella (MMR) vaccination between January and June 2004. Children who reached their fifth birthday would have been scheduled to receive their third dose primary vaccinations between May and July 2000, their first MMR between January and June 2001, their pre-school diphtheria, tetanus, acellular pertussis (DTaP) booster, polio, and second dose MMR from January 2003 onwards.

Methods

Data from computerised child health information systems were submitted in May and June 2005 for children resident in Administrative Regions in Wales, Health Boards in Scotland and Northern Ireland, and for children in the Primary Care Trust (PCT) responsible population (as defined below) in England, on 31 March 2005. Data were collected for those reaching their first, second, or fifth birthdays during the evaluation quarter (January to March 2005) and completing a primary course of each antigen: three doses of diphtheria (D3), tetanus (T3), pertussis (P3), polio (Pol3), *Haemophilus influenzae* type b (Hib3), meningococcal conjugate Group C (MenC3) vaccines; and one dose of measles, mumps, and rubella (MMR1) vaccine given at any time up to their first or second birthdays. Numbers were also requested for children who had received a primary course of each antigen (DTPol3, P3, and Hib3), a pre-school booster dose (DTPol4), at least one MMR (MMR1), and two doses of MMR (MMR2) given at any time up to their fifth birthday.

For this quarter, COVER data in England were collected by PCT and summarised by Government Office Regions (GORs) (1). The PCTs and GORs have different boundaries and populations to health authorities and regional health authorities used in quarterly reports before April 2003. The PCT responsible population for COVER data includes all children registered with a general practitioner (GP) whose practice forms part of the PCT, regardless of where the child is resident. In addition, the PCT responsible population will also include any children not registered with a GP, who are resident within the PCTs statutory geographical boundary. Children resident within the PCT geographical area, but registered with a GP belonging to another PCT, are the responsibility of that other PCT

These data are evaluated against the World Health Organization (WHO) targets of 95% coverage annually for each antigen (except MenC) by two years of age at the national level and of at least 90% coverage annually in each strategic health authority (1).

Results

Coverage at 12 and 24 months

Data were received from all 325 PCTs (England), Health Boards (Scotland and Northern Ireland), and Administrative Regions (Wales) (PCT/HB/AR) (tables 1 and 2). Eighty-two of the participating localities (25 %) achieved at least 95% coverage at 12 months for three doses of diphtheria, tetanus, and polio vaccine (DTPol3). Seventy-nine (24%) achieved at least 95% coverage at 12 months for three doses of Hib vaccine (Hib3), and 75 (23%) for three doses of pertussis vaccine (P3). One hundred and eighty-two localities (56 %) achieved at least 95% coverage at 24 months for DTPol3, 158 (49%) for P3, and 169 (52%) for Hib3. All countries and all English

regions, except for London , achieved at least 90% coverage for these antigens. No PCT/HB/AR reached 95% coverage for MMR at 24 months. Compared to the previous quarter, UK coverage at 12 months increased by 0.4% for MenC and by 0.5% for DTPol3, P3 and Hib3. UK coverage at 24 months decreased by 0.1% for DTPol3 and P3, by 0.2% for Hib3, and by 0.3% for MenC. MMR1 increased by 0.9% to 81.7% (tables 1 and 2) (2).

Table 1 Completed primary immunisations (all antigens) by 12 months: January to March 2005

Region/Country	Reports* (total)	DTPol3 %	P3 %	Hib3 %	MenC %
Regions of England					
North East	16 (16)	92.7	92.5	92.4	92.5
North West	42 (42)	92.1	91.8	92	92
Yorkshire and the Humber	34 (34)	91.1	90.9	90.9	90.6
East Midlands	28 (28)	93.2	93	92.8	92.8
West Midlands	30 (30)	91.7	91.4	91.5	91.7
East of England	41 (41)	93.1	92.9	93	92.9
London	31 (31)	81.4	81.4	81.1	80.9
South East	49 (49)	91.5	91.4	91.4	91.3
South West	32 (32)	92.5	92.4	92.5	92.2
England (Total)	**303 (303)**	**90.2**	**90.1**	**90**	**89.9**
Wales	**3 (3)**	**94.3**	**93.9**	**94**	**93.9**
Northern Ireland	**4 (4)**	**95.5**	**95.4**	**95.6**	**95.8**
Scotland	**15 (15)**	**95.1**	**94.9**	**94.7**	**93.8**
United Kingdom	**325 (325)**	**91**	**90.8**	**90.8**	**90.6**

*Reports from PCTs/health boards/administrative regions.

Table 2 Completed primary immunisations (all antigens) by 24 months: January to March 2005

Region/Country	Reports* (total)	DTPol3 %	P3 %	Hib3 %	MenC %	MMR1%
Regions of England						
North East	16 (16)	94.9	94.5	94.6	94.3	85.3
North West	42 (42)	94.7	94.2	94.3	94.6	84.2
Yorkshire and the Humber	34 (34)	93.3	92.9	93.2	92.7	82.9
East Midlands	28 (28)	96.2	96	96	95.4	86.2
West Midlands	30 (30)	95.3	94.8	95	95.1	82.9
East of England	41 (41)	94.6	94.2	94.4	94.1	81.9
London	31 (31)	86.3	86.1	86.1	85.2	70.5
South East	49 (49)	94.2	93.9	94.1	93.2	81.5
South West	32 (32)	94.4	93.9	94	93.8	80.7

England (Total)	**303 (303)**	**93.2**	**92.8**	**92.9**	**92.5**	**80.8**
Wales	**3 (3)**	**96.1**	**95.2**	**95.8**	**95.8**	**82.3**
Northern Ireland	**4 (4)**	**96.8**	**96.4**	**96.9**	**97.1**	**89.3**
Scotland	**15 (15)**	**97.4**	**97.1**	**96.7**	**96.4**	**88.4**
United Kingdom	**325 (325)**	**93.8**	**93.4**	**93.5**	**93.1**	**81.7**

*Reports from PCTs/health boards/administrative regions.

The country specific 12 month coverage for MenC vaccine was 89.9% in Englan , 93.9% in Wales, 95.8% in Northern Ireland, and 93.8% in Scotland . Coverage for the 24 month cohort was 92.5% in England, 95.8% in Wales, 97.1% in Northern Ireland, and 96.4% in Scotland .

Coverage at 5 years

Data were received from 307 localities in England, Northern Ireland, and Wales . Compared to last quarter, coverage at five years increased by 0.1% for P3, by 0.2% for DTPol3, by 0.3% for Hib3, and by 1.3% for MenC. Coverage for DTPol4 increased by 0.4% to 79.7%. Coverage for MMR1 stayed at 88.8%, and MMR2 increased by 0.9% to 74.4% (table 3) (2). Country-specific data for MenC coverage at five years was 91.5% in England , 94.7% in Wales and 94.9% in Northern Ireland (table 3). Data were also received for DTPol4 and MMR2 in children reaching their sixth birthday in Scottish Health Boards; coverage was 94.2% and 89.2% respectively.

Table 3 Completed primary immunisations (all antigens) by 5 years: January to March 2005

Region/Country		Reports* (total)	DTPol3 %	P3 %	Hib3 %	MenC %	MMR1 %	MMR2 %	DTPol4 %
Regions of England									
	North East	16 (16)	95.7	95.1	95.5	94.4	91.8	79.8	84.1
	North West	42 (42)	95.5	94.5	94.5	94.1	91.2	77.2	81.3
	Yorkshire and the Humber	34 (34)	94.7	94.3	94.4	92.5	90.7	76.5	79.6
	East Midlands	28 (28)	96.5	96	95.7	95.2	92.3	77.9	83.8
	West Midlands	30 (30)	95.9	95.1	94.8	93.2	91.7	77.6	83.2
	East of England	41(41)	94.3	92.9	94	92.7	87.9	76	81.8
	London	31 (31)	86.1	85.6	85.3	81.2	79.3	58.6	61.4
	South East	46 (49)	94.8	94.1	94.5	93	88.7	74	81.9
	South West	32 (32)	95.9	95.3	95.2	93.1	90.2	76.6	82.2
England (Total)		300(303)	93.8	93.1	93.2	91.5	88.6	73.9	79.1
Wales		3 (3)	95.4	94	95.2	94.7	88.4	75	83.6
Northern Ireland		4 (4)	97.7	97.2	96.9	94.9	95.7	85.9	88.6
Scotland 6 years†		15 (15)	–	–	–	–	–	89.2	94.2
England, Wales, and Northern Ireland		322(325)	94.1	93.3	93.5	91.8	88.8	74.4	79.7

*Reports from PCTs/health boards/administrative regions.
† No data available at 5 years.

MMR sentinel surveillance scheme coverage

In order to give a more timely indication of trends in MMR coverage, a sentinel surveillance scheme has monitored MMR coverage in a sample of children becoming 16 and 24 months of age in a particular month in

England from April 1999. Initially, this information was requested every four months for all children in the participating Trusts/health authorities who were turning 16 months or 24 months old in the defined one month period. From March 2001, the request was made quarterly so that the information coincided with routine COVER reports. Since March 2002, this information has been routinely collected every month and was extended in June 2002 to include coverage at 20 and 36 months of age to help determine whether there is further improvement in coverage as children get older, because some parents delay MMR vaccination. This sentinel scheme is based on a sample of Trusts/PCTs in England and represents approximately 20% of the population, although monthly reporting is not always complete for the whole sample. This means that these data are not geographically representative or sufficiently detailed to allow us to compare different regions, and will be subject to greater variability than the national data due to varying monthly sample size. Data collected from March to May 2005 for children in the four age cohorts is summarised in table 4 (range for the three months was from 68.2% to 71.2% at 16 months, 78.4% to 79.5% at 20 months, 80.5% to 82.7% at 24 months, and 85.5% to 86.3% at 36 months).

Table 4 Monthly sentinel estimates of measles, mumps, and rubella (MMR) coverage at 16, 20, 24, and 36 months: March to May 2005

Evaluation month	Number of PCTs/trust	Age at vaccination			
		16 months	20 months	24 months	36 months
March 05	39	69.2	79.3	81.4	85.5
April 05	38	68.2	78.4	80.5	85.5
May 05	37	71.2	79.5	82.7	86.3

Comments

UK coverage of MMR at 24 months and MMR2 at 5 years both increased by 0.9% (to 81.7% and 74.5% respectively) this quarter compared to last (2). At 24 months, London recorded the largest increase of 2.6%, followed by increases of 1.6% in Northern Ireland and 1.4% in West Midlands . An increase in MMR at 24 months was predicted by data from the sentinel surveillance scheme of early MMR coverage at 16 months (2). Factors that may have contributed to these increases include greater awareness of the importance of MMR as a result of the ongoing outbreak of mumps in older teenagers and young adults (3), and the Capital catch-up campaign conducted across London from November 2004 (4).

When compared to the previous quarter, UK coverage for all antigens other than MMR increased marginally (0.4% to 0.5%) at 12 months and 5 years, for this quarter (2). The WHO target of 95% coverage at 24 months at the country level was achieved for all antigens except for MMR in Wales, Northern Ireland and Scotland, but due to the lower coverage in England the UK did not achieve the target for any antigen (1).

Relevant links for country specific coverage data

- **Wales**
  <http://www.wales.nhs.uk/sites/page.cfm?OrgID=368&PID=2278>
- **Scotland**
  <http://www.show.scot.nhs.uk/scieh/>
- **Northern Ireland**
  <http://www.cdscni.org.uk/surveillance/Coveragestats/default.asp>
- **England**
  <http://www.publications.doh.gov.uk/public/sb0416.htm>.

Other relevant links

- http://www.hpa.org.uk/infections/topics_az/vaccination/vac_coverage.htm
- <http://www.mmrthefacts.nhs.uk/>

Laboratory confirmed cases of measles, mumps, and rubella, England and Wales: January to March 2005

Cases include those confirmed by oral fluid IgM antibody tests and routine laboratory reports (tables 1 and 2). Analyses are by date of onset. Regional breakdown figures relate to Government Office Regions rather than regional health authorities (pre-April 2002 definitions) as used previously in this section. Quarterly figures for cases confirmed by oral fluid antibody detection only from 1995 are available from:

<http://www.hpa.org.uk/infections/topics_az/measles/data_not_confirmed.htm>
<http://www.hpa.org.uk/infections/topics_az/mumps/data_quarter.htm>
<http://www.hpa.org.uk/infections/topics_az/rubella/data_rub_not.htm>

and annual total numbers of confirmed cases by health region and age from:

<http://www.hpa.org.uk/infections/topics_az/measles/data_reg_age.htm>
<http://www.hpa.org.uk/infections/topics_az/mumps/data_reg_age.htm>
<http://www.hpa.org.uk/infections/topics_az/rubella/data_reg_age.htm>

Table 1 Total confirmed cases of measles and rubella, and oral fluid IgM antibody tests in cases notified to ONS*, weeks 01-13/05

	Cases			Oral fluid†	IgM antibody	Results		
	Notified	Tested	%	Total positive	Recently vaccinated	Confirmed	Other lab confirmed	Total confirmed cases
Measles	591	575	97.3	20	8	12	5	17
Rubella	299	220	73.6	2	1	1	3	4

*ONS = Office for National Statistics

As previously reported, the cohort at an increased risk of mumps because they have either received no MMR vaccine, or only one dose were born between 1981 and 1990 (1). In 2004, the number of notified cases and the proportion of oral fluid samples tested and confirmed increased dramatically with an overall confirmation rate of around 60%. Those born between 1981 and 1986 (*ie*, aged between 18 and 23 years) had a higher confirmation rate with over 75% of those tested confirmed by IgM antibody testing. False negative results can occur in a small proportion of cases particularly if the sample is taken early, and, therefore, it is likely that virtually all cases in this age range are genuine mumps (2). At the beginning of February 2005, the Health Protection Agency recommended that, during this period of increased mumps incidence, oral fluid samples should not be taken from individuals with clinical mumps who were born between 1981 and 1986, and that they should be managed as if there were a confirmed case. Samples should continue to be taken from cases in all other age groups, or where it is clinically important to confirm the diagnosis (*eg*, where a complication has been observed) (2). As a result of these recommendations to limit testing temporarily, the number of laboratory confirmed cases in this age group will be artificially low as they underestimate the true burden of infection. For the purpose of reporting,however, all notified cases of mumps in this age group are being counted as confirmed. The age group has been expanded to include those in the15to 24 years age group due to the manner in which notification data are aggregated (table 2).

Table 2 Total confirmed cases of mumps weeks 1-13/05

All ages excluding 15-24 year olds							15-24 year olds	All Ages
Oral fluid IgM antibody results								
Notified	Tested	Percentage tested	Total positive	Recently vaccinated	Confirmed (a)	Other lab confirmed (b)	Notified, assumed confirmed	Total confirmed (a+b+c)
5945	3356	56.5	1381	14	1367	519	14770	16,656

Measles

Seventeen cases of confirmed measles with onset dates in the first quarter of 2005 were reported compared to eight cases in the fourth quarter of 2005 (3). Twelve were children aged under 15 years (eight aged from 1 to 4 years; two aged from 5 to 9 years; and two aged from 10 to 14 years). Five adults aged between 21 and 35 years were also reported. None of the cases had a documented history of vaccination.

Cases were reported from five regions of England; East of England (8), North West (4), South East (2), S West (2), and London (1). One case was imported from Turkey and another case had a recent history of travel to Morocco. No samples suitable for genotyping were available. One cluster of three cases was reported in the North West region. The genotype of the index case of this cluster was a D4 strain. A cluster of seven cases (four aged 1 year) occurred in the East of England. Three of the cases were associated with a nursery. A D5 genotype was identified in four of the seven cases. A D9 genotype was identified in one case from the South West. The small number of cases in this quarter and the variety of genotypes circulating is a good indicator that no indigenous measles transmission is currently occurring.

Mumps

Sixteen thousand six hundred and fifty-six cases of mumps with onset dates in the first quarter of 2005 were either laboratory confirmed or assumed to be genuine mumps due to their age, compared to 4325 in the fourth quarter of 2004 (3) (table 3). The total number of mumps cases notified in this quarter was 20,715 compared to 8999 in the final quarter of last year (provisional data). This is by far the highest quarterly total of both confirmed cases and notified cases since oral fluid surveillance began in 1995. All regions in England and Wales reported cases this quarter and all regions reported an increase in the number of cases in this quarter compared to the fourth quarter of 2004. Five cases of suspected encephalitis were reported, one with a history of vaccination (four oral fluid IgM positive; one serum IgM positive). Seven cases reported meningitis as a complication, two of which had a history of vaccination. Two were children aged under 15 years, six were adults aged between 20 and 29 years, three were aged over 30 years, and one was of unknown age.

Table 3 Confirmed cases of mumps by age group and region, England and Wales: weeks 01-13/05

Region	Age group								
	<1y	1-4y	5-9y	10-14y	15-19y	20-24y	≥25y	Not known	Total
North East	–	3	2	28	873	491	70	4	**1471**
North West	1	13	23	118	1782	809	212	12	**2970**
Yorkshire and the Humber	–	–	7	69	1003	606	106	4	**1795**
East Midlands	–	3	11	43	649	484	89	4	**1283**
West Midlands	–	3	8	58	1179	635	85	10	**1978**
East of England	1	3	1	22	429	289	84	16	**845**
London	–	7	19	35	477	325	79	4	**946**
South East	1	3	15	56	891	664	159	11	**1800**
South West	–	7	27	90	1243	764	126	4	**2261**
Wales	–	3	8	30	831	346	42	2	**1262**
Not known	–	–	1	14	–	–	14	16	**45**
Total	**3**	**45**	**122**	**563**	**9357**	**5413**	**1066**	**87**	**16,656**

*Notified cases of mumps.

Rubella

Four confirmed cases of rubella were reported in this quarter; all were adult males (aged 17, 31, 36, and 40 years). Rubella remains a rare disease in England and Wales with only 16 (provisional) confirmed cases throughout 2004.

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Bacteraemia

The fourth year of regional and national analyses of the Department of Health's mandatory – March 2005

The fourth year of regional and national analyses of the Department of Health's mandatory *Staphylococcus aureus* surveillance scheme in England: April 2001 – March 2005

Key points:

- Between April 2001 and March 2005 all 173 acute NHS Trusts in England have participated in the Department of Health's mandatory bacteraemia surveillance scheme for *Staphylococcus aureus*.
- This report describes data submitted in the fourth year of the mandatory surveillance scheme, ie, the period April 2004 to March 2005 and includes an analysis of the trends in methicillin resistant *S. aureus* (MRSA) rates in hospitals over the first four years of the scheme.
- There has been a decrease in the number of MRSA and methicillin sensitive *S. aureus* (MSSA) reports made in England in the fourth year (2004 to 2005) of the surveillance scheme compared to the third year (2003 to 2004). The numbers of MRSA reports are at similar levels to the start of the scheme.
- There has been a year-on-year decrease in the percentage of *S. aureus* that are methicillin resistant from 40.4% in the first year of the scheme to 38.9% in the fourth year of the scheme.
- The rate of MRSA per 1000 bed days is similar in the first and most recent year of the scheme, with higher rates in-between. Rates are slightly higher over the six months spanning winter.

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- The rate of MRSA per 1000 bed days is similar in the first and most recent year of the scheme, with higher rates in-between. Rates are slightly higher over the six months spanning winter.

Introduction

This report presents the results of the fourth year of the Department of Health's mandatory *Staphylococcus aureus* bacteraemia surveillance scheme for all acute NHS Trusts in England. Results pertaining to the three previous years of the scheme have already been published (1-3). This report should be considered in conjunction with the Trust-specific data, which is available on the Department of Health website <http//:www.dh.gov.uk>. Further information on MRSA rates, analysed by Trust category, is available on the HPA website <http://www.hpa.org.uk/infections/topics_az/staphylo/data.htm>.

Methods, data collection, and analysis

One hundred and seventy-three NHS acute Trusts contributed to the mandatory surveillance scheme for *S. aureus* in the period from April 2004 to March 2005. Data were collected quarterly from each acute NHS Trust in England by Health Protection Agency (HPA) Local and Regional Services Division (LARS) and transferred to the HPA Centre for Infections (CfI) for national analysis.

The Department of Health's Healthcare Associated Infection Surveillance Steering Group was responsible for developing the dataset for this mandatory surveillance scheme. Methodological and interpretative information, including a glossary of terms, is published elsewhere (4).

All analyses were performed according to the current configuration of Trusts. Data from merged Trusts were combined for pre-merger time periods. Regional analysis was performed using the English regional boundaries introduced in April 2002.

The latest available overnight bed occupancy data, for financial year 2003/2004 were derived from the KH03 dataset provided by the Department of Health (5). These data were used to derive the denominators for rate calculations by Trust and by region.

$$\text{Trust rate} = \left[\frac{\text{No. of MRSA bacteraemias for time period}}{\text{Average daily bed occupancy} \times \text{number of days in time period}}\right] \times 1000$$

Comparative data and trend analyses for the first four years of the surveillance scheme were based on these data.

This report is based on reports of *S. aureus* isolated from blood cultures in English Acute Trusts. Among the data items explored were the number of blood culture sets examined, (defined as a sample arising from a single venepuncture, irrespective of the number of bottles tested), and the total number of positive blood cultures, which represents all positive results for bacterial growth, including repeat specimens and contaminants. Statistical analyses was performed by CfI Statistics Department using commercial software*.

These data are used to monitor trends in methicillin resistant *S. aureus* (MRSA) bacteraemias. Trusts are provided with feedback to allow them an opportunity to compare their own rates to the national data.

These data should not be used as the basis for decisions on the effectiveness of interventions in individual Trusts without further local investigations, as higher rates may be indicative of higher clinical activity or particular case-mix.

Results

Number of *S. aureus* isolates reported

The number of reports of *S. aureus* bacteraemias decreased by 843 (4.5%) in the fourth year of the mandatory surveillance

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

Table 1 Number of total *S. aureus* and MRSA bacteraemia reports in England: April 2001 to March 2005

Year	Total *S. aureus*	MRSA	%MRSA resistant
Year 1 (2001-2)	17,933	7249	40.42
Year 2 (2002-3)	18,496	7373	38.86
Year 3 (2003-4)	19,376	7684	39.66
Year 4 (2004-5*)	18,533	7212	38.91

*Provisional data.

Table 2 Number of blood culture sets reported in England: April 2001 to March 2005

	Total blood culture sets	Positive blood culture sets	% blood culture sets tested positive
Year 1 (2001-2)	1,450,615	242,902	16.74
Year 2 (2002-3)	1,488,071	246,119	16.54
Year 3 (2003-4)	1,583,775	264,674	16.71
Year 4 (2004-5*)	1,445,444	239,880	16.60

*Provisional data.

scheme (table 1). Of these, 7212 (38.9%) were identified as methicillin resistant.

Over the first three years of the mandatory surveillance scheme, the number of MRSA reports increased by 6%, but have since dropped below the total for the first year of the scheme (table 1). The number of methicillin sensitive *S. aureus* (MSSA) reports increased by 6% over the first four years of the scheme, however, in the past year there has been a decrease (figure 1).

The percentage of *S. aureus* that was methicillin resistant has decreased year-on-year over the four years of the scheme (table 1). For the first three years of the scheme there was a 9% increase in the total number of blood culture sets taken and the total number of positive blood cultures recorded. In the fourth year of the scheme both these figures had fallen below the total reports received in the first year of the scheme. Despite this, the percentage of blood culture sets testing positive has remained constant at 16%, while those positive for *S. aureus have remained* constant at 7% to 8% of total positive blood cultures (table 2, figure 2).

Analysis of MRSA national rates

The rate of MRSA bacteraemias in England in the fourth year of the scheme is 0.17 per 1000 bed-days, which is the same rate as that reported in the first year of the scheme. When the data are analysed at six month intervals, there appears to be a slight increase in the rate during the second six months of the year (October to March) compared to the first six months (April to September) (table 3).

Regional Distributions

The number of acute NHS Trusts varies with the region, ranging from eight in the North East region to 32 in London. The highest resident population for 2003 was 8,080,280 in the South East and the lowest 2,539,363 in the North East. There is considerable variation across the regions in reports of the rates of MRSA bacteraemias per 1000 bed days made in the fourth year of mandatory surveillance. The only significant trend over the four year period is an increase in the bacteraemia rate in the North West region. The highest rates reported in the fourth year of the scheme were from the London region

Figure 1 Number of MRSA and MSSA bacteraemia reports in England: April 2001 to March 2005

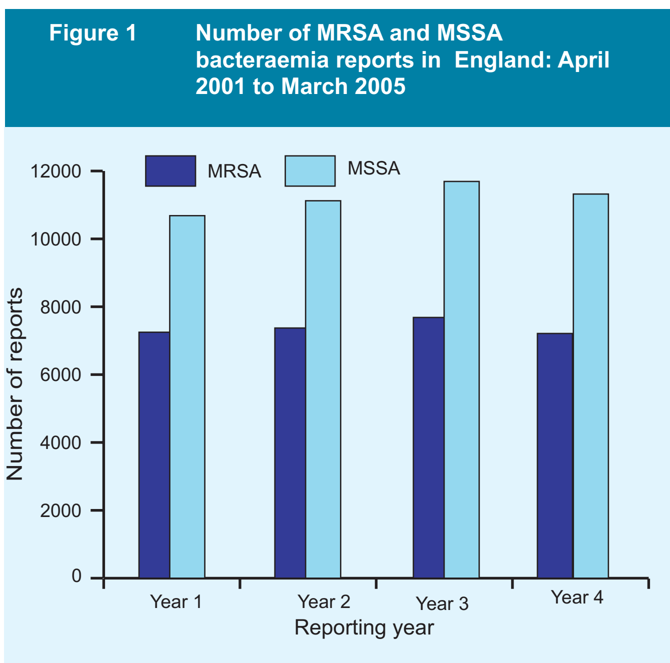


Figure 2 Total numbers of blood cultures taken and positive blood culture sets in England: April 2001 to March 2005

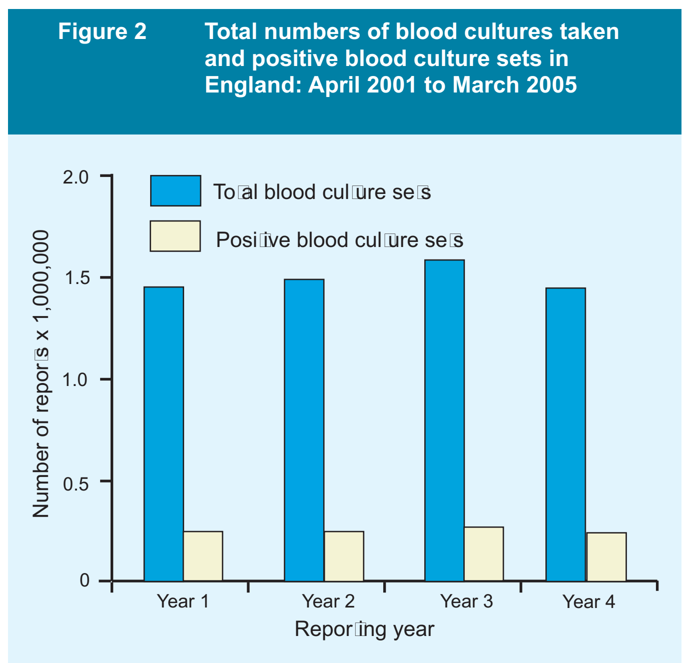
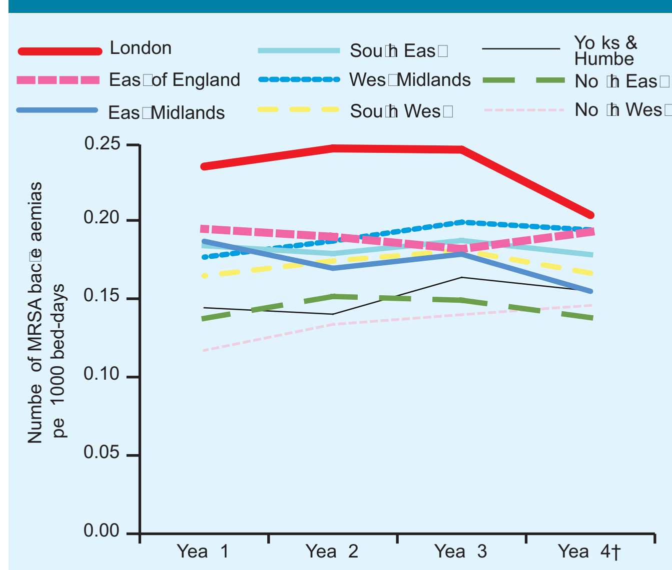


Table 3 Numbers and rates* of MRSA bacteraemias in England, by 6 month periods from April 2001 to March 2005

	Number of MRSA bacteraemias	Rate of MRSA bacteraemias (number of bacteraemias per 1000 bed-days)
Year 1		
Apr 01 - Sep 01	3598	0.170
Oct 01 - Mar 02	3651	0.172
Year 2		
Apr 02 - Sep 02	3574	0.171
Oct 02 - Mar 03	3799	0.182
Year 3		
Apr 03 - Sep 03	3744	0.178
Oct 03 - Mar 04	3940	0.188
Year 4		
Apr 04 - Sep 04	3524	0.168†
Oct 04 - Mar 05	3688	0.176†

*Rates calculated using appropriate year KH03 data.
†Preliminary data using 03/04 KH03 data.

Figure 3 MRSA bacteraemia rates* in England from April 2001 to March 2005 by region



*Rates calculated using appropriate year KH03 data.
†Preliminary data using 03/04 KH03 data.

(0.20/1000 bed-days in the period from April 04 to March 05), although this reflects a falling rate in this region (figure 3).

Results by Trust categorisation

Trust-specific data is available on the Department of Health website (6). Further information on *S. aureus* rates analysed by Trust categorisation is available on the Health Protection Agency website (7).

Discussion

This report describes four years' data from the Department of Health's mandatory *S. aureus* bacteraemia surveillance scheme, MRSA bacteraemias being used as an indicator of the burden of serious MRSA infections. The total numbers of MRSA reports have risen in the first three years of the scheme, but have now fallen to first year levels. The rates of MRSA per 1000 bed-days show a great deal of variability between regions, but the fourth year national rate is essentially the same as the first year (7). The percentage of *S. aureus* bacteraemias that were methicillin resistant has fallen year-on-year. Although it would be premature to state that MRSA is decreasing, it is notable that numbers no longer appear to be increasing.

There are limitations to comparisons between regions as the rate of MRSA may be affected by a number of factors. To allow comparisons, NHS acute Trusts are categorised by the regions according to type. The three types are:

- General Acute Trusts: Trusts providing general acute healthcare services;
- Specialist Trusts: Trusts with specialist services which receive patients referred from other Trusts for these services;
- Single Specialty Trusts: Trusts undertaking health services for a particular specialty, *eg*, orthopaedics.

Within regions, Trust mix is varied with differing numbers of General Acute, Specialist, and Single Specialty hospitals. Other factors affecting rates of MRSA bacteraemias include the case mix in individual Trusts, the intensity of blood culture sampling, and the predominant strain of MRSA in the Trust. In all cases, vulnerability of patients to both bacteraemia and MRSA infection is affected by their underlying illness and the medical treatment they receive. MRSA rates tend to be higher in Specialist Trusts. This is probably due to case mix; these hospitals often treat more severely ill patients and accept transfers from other Trusts for specialist services.

In addition, the patient may not have acquired the *S. aureus* or MRSA infection in the Trust where they receive treatment; the infection could have been acquired in another hospital or in the community. Recently in the United States, Australia, and some countries in Europe, community-acquired MRSA has been reported (8-10). Although new community MRSA strains are unusual in this country, the export of hospital strains to community settings is well recognised. The data collected by the mandatory surveillance scheme in England does not currently distinguish community-acquired MRSA from hospital-acquired infection, although work is in progress to address this (see below).

For each year, rates were calculated using bed occupancy data from the correct year except for the fourth year of the scheme where the 2003/04 bed occupancy data was used. The fourth year data is therefore preliminary and will need to be corrected in future publications when the KH03 data for 2004/5 becomes available.

A survey of all NHS Acute Trusts in England was carried out in December 2004 to examine the various factors that can affect reporting of MRSA bacteraemias under the mandatory surveillance scheme, as well as determining the impact of the reporting system. This user study will be published shortly. As a result of the findings from this user study, the Department of Health has commissioned an enhanced MRSA surveillance scheme that is currently being piloted in 21 Trusts and will be rolled out to all acute Trusts in Autumn 2005, as announced to Trust Chief Executives (11).

The enhanced system allows for the separation of reports identified within 48 hours of admission from those acquired

during the current admission. The enhanced system will also allow Trusts to specify the department or specialism where the patient was being treated when the infection was identified. This allows speciality rates to be calculated using Hospital Episode Statistics (HES) data as the denominator instead of bed occupancy at midnight (the basis for the KHO3 statistics) <http://www.hesonline.nhs.uk>.

This report does not include named Trust data, which is available on the Department of Health website (6), as determined by The Chief Medical Officer (CMO) in '*Winning Ways'*, his report on healthcare associated infection in England that was published in December 2003 (12). Further analyses are available on the HPA website (7).

The information presented in this report is the subject of ongoing, further investigations which will include an analysis of trends at the Trust level in an attempt to gain an improved understanding of recent changes in the number of MRSA reports.

Acknowledgements

The reports of mandatory surveillance of *S. aureus* are facilitated by contributions from Trust microbiologists, infection control teams, and the regional health protection teams who collect, collate and, where necessary, validate these data. In addition, the support from colleagues within the Health Protection Agency, Centre for Infections Laboratories and Statistics Department, in particular, is valued in the pre-publication scrutiny of these reports. These contributions are greatly appreciated.

We are always pleased to hear your views. Please send your comments/feedback to Andrew Pearson <andrew.pearson@hpa.org.uk>. If you have a comment or query on the statistical methods referred to in this report, please contact André Charlett <andre.charlett@hpa.org.uk>.

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