



Health Protection Report

weekly report

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£3.5million research programme to combat the threat of chemical terrorism

The Health Protection Agency and the Defence Science and Technology Laboratory (Dstl), an agency of the Ministry of Defence, are to collaborate on a major £3.5million research programme to combat the threat of chemical terrorism.

The collaboration will also involve the universities of Birmingham, Surrey and Cranfield as well as military establishments in France (Centre de Recherches du Service de Santé des Armées), the Czech Republic (Faculty of Military Health Sciences), the Swedish Defence Research Agency and the US Department of Defense.

HPA, Dstl and academic scientists will join forces to develop new and improved ways of protecting the public from the accidental or deliberate release of toxic substances. Research will focus on decontamination procedures relating to hazardous materials such as toxic chemical agents and toxic industrial chemicals. Work will initially concentrate on decontamination procedures for emergency services.

Scientists will investigate decontamination methods at specialist Dstl labs, which were designed to safely handle toxic chemicals. Scientists will also use harmless chemical simulants in disaster planning exercises to test emergency services' ability to respond to a chemical terrorist attack.

The initial three-year programme is being funded by the Department of Health and the Ministry of Defence in the UK, the US Department of Defense and the European Union's Health Programme.

New HPA guidance on post-flooding precautions

The HPA has published an updated and redesigned flooding section of its website [1], coinciding with publication of Sir Michael Pitt's final report on last summer's floods [2].

The new or updated HPA information provides both precautionary advice for the public (on avoidance of risks to health in post-flooding situations) and more detailed guidance for health professionals and other specialists involved in protection of health of local communities.

The latter comprises eight guidance documents for professionals [3] including: advice to healthcare professionals (particularly focusing on control of microbiological and chemical risks); checklists for HPUs on responding to severe flooding; interim guidance for Health Protection Units on surveillance activities during floods; a chemical contamination risk assessment framework; and advice on the provision of support for communities during post-flooding cleanup operations.

The public information includes a new set of Frequently Asked Questions and three new leaflets covering post-flooding clean-ups, coping without mains water and other general advice [4].

The documents have been produced and quality assured through the cross-divisional Flood Coordination Group (FCG).

References

1. HPA flooding webpages: <http://www.hpa.org.uk/flooding>
2. Cabinet Office. Lessons learned from the 2007 floods (25 June 200). Available from: http://www.cabinetoffice.gov.uk/thepittreview/final_report.aspx.
3. See HPA website Flooding Guidelines, <http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1213686564121?p=1213686564121>.
4. See HPA website Flooding General Information, <http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1213686561915?p=1213686561915>.

Cryptosporidium contamination incident in East Midlands

Extensive investigations are continuing in the West Midlands to determine the source of the *Cryptosporidium* contamination of drinking water supplies in the Northampton area that was identified by routine sampling earlier in the week. A Boiled Water Notice was issued by the water supplier, Anglian Water, to more than 100,000 premises following the identification of contamination by *Cryptosporidium*, which can cause diarrhoea. To date, there have been no confirmed cases of people being infected as a result of the incident but the notice is expected to remain in force for a number of weeks.

As a precaution, the Health Protection Agency has written to all local GPs and hospitals in the region asking them to be vigilant for signs and symptoms of infection and to send faecal specimens for testing for those with diarrhoea. Although there have been no human cases linked to the contamination, cases might yet occur and local microbiology laboratories are continuing to examine all faecal samples for the parasite.

Further information

Boiling of drinking water, Northampton, Daventry and West of Daventry, Anglian Water website alert, <http://www.anglianwater.co.uk/index.php?sectionid=135&contentid=878&parentid=0>.

Infection reports

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Immunisation

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COVER programme: January to March 2008: Quarterly vaccination coverage statistics for children aged up to five years in the United Kingdom

This report of the 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 2008.

Children who reached their first birthday in the quarter (born January to March 2007) were the third quarterly birth cohort to have been scheduled to receive their primary vaccinations according to the new schedule introduced on 4 September 2006 [1] (three doses diphtheria, tetanus, acellular pertussis, polio, and *Haemophilus influenzae* type b vaccine (DTaP/IPV/Hib vaccine) two doses each of meningococcal serogroup C conjugate vaccine (MenC vaccine) and pneumococcal vaccine (PCV), completing between May 2007 and July 2007.

Children who reached their second birthday in the quarter (born January to March 2006) would have been scheduled to receive their third dose primary vaccinations between May 2006 and July 2006 and first measles, mumps, and rubella (MMR) vaccination between February 2007 and July 2007. These children are the second quarterly birth cohort to be routinely scheduled to receive a booster dose of Hib and MenC vaccine (given as a combined Hib/MenC vaccine) at 12 months, and a PCV vaccine at 13 months of age [1].

Children who reached their fifth birthday in the quarter (born January to March 2003) would have been scheduled to receive: their third dose primary vaccinations between May 2003 and July 2003; their first MMR between February 2004 and July 2004; and their pre-school diphtheria, tetanus, acellular pertussis, inactivated polio (DTaP/IPV) booster and second-dose MMR from May 2006 onwards.

Methods

Methods of data collection for COVER, sentinel MMR coverage and neonatal hepatitis B vaccination coverage are described on the HPA website at:
<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListDate/Page/1209454766294?p=1209454766294>.

Results

Data were received from all Health Boards (HBs) in Scotland and Northern Ireland, Administrative Regions (ARs) in Wales, and 144/152 Primary Care Trusts (PCTs) in England.

Eight PCTs were unable to provide any data this quarter: one in the South West, one in East Midlands and six in London. Four of the London PCTs use the Child Health Interim Application (CHIA) child health system and two use RiO child health system. Problems with producing coverage data using the CHIA and RiO systems have been reported previously [2] and ongoing data quality concerns and caveats have been issued by seven of these PCTs.

Ten reporting PCTs (seven in London) have not published Hib/MenC booster coverage at 24 months due to data quality concerns, and seven reporting PCTs in London have not published PCV booster at 24 months for similar reasons. These factors contribute to the continuing need for caution in evaluating the vaccination programme in London.

Individual PCT data for this quarter are published on the HPA website at http://www.hpa.org.uk/infections/topics_az/cover/default.htm.

Coverage at 12 and 24 months

Sixty-two of the 165 participating PCTs/HBs/ARs (38%) achieved at least 95% coverage at 12 months for three doses of diphtheria, tetanus, pertussis, polio and Hib vaccine (DTaP/IPV/Hib3) and 51 (31%) for at least two doses of MenC vaccine. In this third evaluation of PCV coverage at 12 months, 46 PCTs/HB/ARs (28%) achieved at least 95%. At least 90% coverage at 12 months for DTaP/IPV/Hib3, MenC2 and PCV2 was achieved for all countries and all English SHAs apart from London and South East Coast SHAs. One hundred PCTs/HBs/ARs (61%) achieved at least 95% coverage at 24 months for DTaP/IPV/Hib3, and 90 (55%) for MenC.

UK coverage at 12 months for DTaP/IPV/Hib3 increased by 0.4% for the second consecutive quarter to 91.8% (table 1) [2]. UK MenC at 12 months increased by 0.7 to 91% and PCV increased 0.4% to 90.5%. Country-specific comparisons show Scotland maintained coverage above 96% for both MenC and PCV, Wales improved coverage by 0.5% and 0.3%, and in England MenC coverage increased 0.8% to 90.1% (ranging from 94.2% in the South West to 76.7% in London) and PCV coverage increased 0.5% to 89.6% (range 94% in the South West, 76.6% in London) (table 1) [2].

UK DTaP/IPV/Hib coverage at 24 months increased 0.2% to 94.3% whilst MenC at 93.3% was 0.4% lower than the October to December 2007 coverage. UK MMR coverage at 24 months decreased 0.2% to 84.1%; MMR coverage was highest in Scotland at 91.2%. Coverage for English regions (excluding London) and Wales ranged from 80.5% to 87.9%. (table 2). London coverage decreased by 0.5% compared to the previous quarter to 70.5%. UK coverage for PCV booster and Hib/MenC vaccination at 24 months are reported for the second time this quarter, and were 75.5% and 78.0% respectively, with variations at country and SHA levels. Scotland achieved the highest coverage for PCV (90.6%) whereas the highest coverage for Hib/MenC, 88.6%, was achieved by Wales (table 2).

Table 1 Completed primary immunisations (all antigens) by 12 months: January to March 2008

Strategic Health Authorities (SHAs)/Country	PCT/HB/AR*† (total)	DTaP/IPV/Hib3 %	MenC2 %	PCV2 %
English SHAs				
North East	12 (12)	94.1	94.0	91.7
North West	24 (24)	93.8	92.9	92.7
Yorkshire and the Humber	14 (14)	92.1	91.5	91.2
East Midlands	8 (9)	92.5	92.2	92.0
West Midlands	17 (17)	93.7	93.6	93.5
East of England	14 (14)	93.6	92.7	91.2
London	25 (31)	79.8	76.7	76.6
South Central	9 (9)	94.6	94.0	93.4

South East Coast	8 (8)	88.5	88.4	88.6
South West	13 (14)	94.1	94.2	94.0
England (Total)	144 (152)	90.9	90.1	89.6
Wales	3 (3)	95.6	95.2	95.2
Northern Ireland	4 (4)	96.2	96.0	92.1
Scotland	14 (14)	96.8	96.5	96.7
United Kingdom	165 (173)	91.8	91.0	90.5

* Care Trusts/health boards/administrative regions.

† Number of trusts reporting DTaP/IPV/Hib3 coverage.

Table 2 Completed primary immunisations (all antigens) by 24 months: January to March 2008

Strategic Health Authorities (SHAs)/Country	PCT/HB/AR*† (total)	DTaP/IPV/Hib3 %	Infant MenC%	PCV Booster%	Hib / MenC %	MMR1%
English SHAs						
North East	12 (12)	96.1	96.1	75.0	76.8	87.4
North West	24 (24)	95.4	92.4	75.8	80.8	85.3
Yorkshire and the Humber	14 (14)	94.1	94.1	72.4	78.3	83.7
East Midlands	8 (9)	96.4	96.8	73.8	80.8	87.4
West Midlands	17 (17)	96.2	95.9	79.6	85.9	87.8
East of England	14 (14)	94.9	95.7	73.2	77.4	83.1
London	25 (31)	85.0	82.9	59.6	53.1	70.5
South Central	9 (9)	95.5	95.0	78.9	84.5	85.5
South East Coast	8 (8)	92.1	90.7	67.5	74.1	80.5
South West	13 (14)	96.6	96.6	81.8	88.4	87.9
England (Total)	144 (152)	93.6	92.9	73.6	77.7	83.0
Wales	3 (3)	97.2	91.4	80.5	88.6	87.4
Northern Ireland	4 (4)	97.6	97.2	76.3	66.9	89.8
Scotland	14 (14)	98.0	96.8	90.6	78.9	91.2
United Kingdom	165 (173)	94.3	93.3	75.5	78.0	84.1

* Primary Care Trusts/health boards/administrative regions.

† Number of trusts reporting DTaP/IPV/Hib3 coverage.

Coverage at 5 years

All regions, except for London, achieved 90% coverage for DTP/Pol3, Hib3 and MenC, with the North East, East Midlands, West Midlands, South West, and Scotland reporting at least 95% coverage for all three (table 3). Excluding London, pre-school booster (DTaP/IPV) coverage ranged from 74.6% to 87.7% in England. Country-specific comparisons show that with the exception of Scotland, where coverage decreased by 3.9% (to 87.1%), DTaP/IPV, coverage increased this quarter. In England MMR1 coverage increased 0.3% to 87.1% and MMR2 coverage increased 1.1% to 74.3% compared to the previous quarter [2]. MMR2 coverage in Wales and Northern Ireland increased by 0.2% and 1.6% respectively, whereas in Scotland MMR2 coverage decreased by 3.5% compared to the previous quarter (to 83.6%). London coverage for all immunisations was lower than corresponding values for other English regions, in particular coverage for MMR2 was 52.6% and DTaP/IPV was 51.1%, at least 20% lower than coverage in any other region.

Table 3. Completed primary immunisations and boosters (all antigens) by 5 years: January to March 2008 (*Hib3 figures corrected, 8 July 2008*)

Strategic Health Authorities (SHAs)/Country	PCT/HB/AR*† (total)	DTP/Pol3 %	Hib3%	MenC%	MMR1%	MMR2%	DTaP/IPV %
English SHAs							
North East	12 (12)	95.7	95.3	95.4	91.8	82.3	84.6
North West	24 (24)	95.2	93.8	93.9	91.2	78.3	80.5
Yorkshire & Humber	14 (14)	93.7	93.0	93.1	89.1	77.3	79.1
East Midlands	8 (9)	95.9	94.9	95.8	91.3	80.7	84.8
West Midlands	17 (17)	95.8	94.8	94.9	90.5	80.5	85.2
East of England	14 (14)	94.2	93.5	94.1	86.0	76.2	80.3
London	24 (31)	80.6	80.8	77.4	74.9	52.6	51.1
South Central	9 (9)	93.6	92.9	92.4	89.4	76.0	81.6
South East Coast	8 (8)	91.0	91.2	90.5	83.5	71.0	74.6
South West	13 (14)	95.8	95.5	95.4	90.8	82.4	87.7
England (Total)	143 (152)	92.5	92.0	91.5	87.1	74.3	77.3
Wales	3 (3)	95.9	95.2	93.5	89.7	79.6	85.8
Northern Ireland	4 (4)	96.7	93.5	94.6	95.3	88.6	91.3
Scotland	14 (14)	98.0	96.8	97.1	94.3	83.6	87.1
United Kingdom	164 (173)	93.2	92.6	92.1	88.0	75.8	78.9

* Primary Care Trusts/health boards/administrative regions

† Number of trusts reporting DTP/Pol3 coverage

MMR sentinel surveillance scheme coverage in England

For methods of data collection see

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListDate/Page/1209454766294?p=1209454766294>

Data collected from March 2008 to May 2008 for children in the four age cohorts is summarised in table 4. The range for the three months was from 66.7 to 68.7% at 16 months, 77.6 to 79.2% at 20 months, 82.1% to 83.0% at 24 months and 88.8% to 90.0% at 36 months).

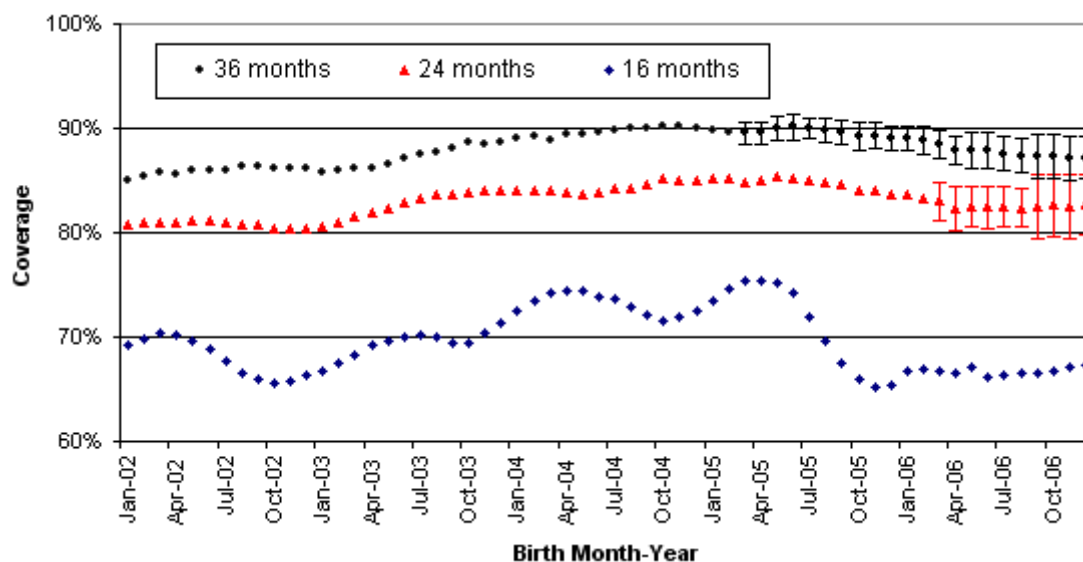
Table 4 Monthly sentinel estimates of measles, mumps rubella (MMR) coverage at 16, 20, 24 and 36 months: March 2008 to May 2008

Evaluation month	Proportion of children vaccinated at each age				
	Number of PCT/trusts	16 months	20 months	24 months	36 months
March 2008	38	66.7	77.6	82.1	89.4
April 2008	36	66.8	78.7	83.0	88.8
May 2008	36	68.7	79.2	82.2	90.0

The figure shows observed and projected MMR coverage at 16, 24 and 36 months in England for birth cohorts from January 2002 to December 2006. Projections of coverage at 24 and 36 months were made using the most recent coverage data for the same birth cohort and an estimate of the proportion, p , of those unvaccinated at each earlier age who were subsequently

vaccinated by the later age. The proportion was estimated using the most recent 18 months data where final coverage was known. 95% confidence intervals were calculated based on the variability of p in the past data. The estimates of p were as follows: 46.8% for 16 to 24 months, 60.6% for 16 to 36 months, 18.5% for 20 to 24 months, 43.1% for 20 to 36 months and 32.8% for 24 to 36 months. Projections make the assumption that p remains constant over the period of the projection. Data at 20 months is not shown to simplify the graph as the line is close to that plotted for the 24 month data.

Figure. Observed and projected MMR coverage at 16, 24 and 36 months by birth year and month in England



Data shown are 5 month moving averages.
Projections are shown with 95% confidence intervals.

Neonatal hepatitis B vaccine coverage data in England

The data presented in table 5 represents coverage for three doses of hepatitis B vaccine in those infants born to hepatitis B surface antigen (HBsAg) positive mothers who reached the age of one year in this quarter (i.e. those born between January and March 2007), and coverage of four doses of vaccine in infants who reached two years of age (i.e. those born between January and March 2006).

Table 5. Neonatal hepatitis B coverage in England: January and March 2008

Region	Returns with 12 month data	12 month denominator	Coverage at 12 months	Returns with 24 month data	24 month denominator	Coverage at 24 months
North East	10 (12)	12	75%	10 (12)	13	38%
North West	20 (24)	55	62%	20 (24)	46	52%
Yorkshire & the Humber	13 (14)	35	80%	13 (14)	37	46%
East Midlands	6 (9)	8	75%	6 (9)	21	62%
West Midlands	15 (17)	54	67%	14 (17)	48	60%
East of England	11 (14)	42	69%	12 (14)	50	40%
London	18 (31)	102	74%	17 (31)	94	47%
South Central	7 (9)	39	79%	7 (9)	25	56%
South East Coast	7 (8)	4	75%	7 (8)	6	33%

South West	10 (14)	13	23%	11 (14)	8	13%
Total	117 (152)	364	70%	117 (152)	348	49%

Data was received for 117/152 (77%) PCTs in England, 6% less than reported in the last quarter. Some of the returns may relate to only part of the PCT due to recent mergers [3]. Coverage in England for three doses in those aged one year remained at 70%, the same as last quarter [2] (Table 5). Although this is lower than the coverage obtained for routine antigens at this age (table 1) the population at risk are highly mobile and high uptake is difficult to achieve [4-8]. By far the largest number of infants at risk is in London where coverage was above the national average at 74% at 12 months. Coverage in England for four doses in those aged 24 months decreased by 13% to 49% compared to the last quarter [2].

Commentary

Children who reached their first birthday in the quarter (born January to March 2007) were the third quarterly birth cohort recorded by COVER to have been scheduled to receive their primary vaccinations according to the new schedule introduced on 4th September 2006, and children reaching their second birthday in the quarter (born January to March 2006) were the second quarterly birth cohort recorded by COVER to be offered at 12 months and 13 months respectively the new booster vaccines, Hib/MenC and PCV also introduced September 2006.

Vaccine coverage data for new vaccines added to the immunisation schedule needs to be evaluated with caution. Some child health systems are still experiencing difficulties with scheduling (including the call, recall function), recording and/or producing 24 month coverage data for children routinely receiving the Hib/MenC and PCV booster doses. Ten reporting PCTs (seven in London) have not published Hib/MenC booster coverage at 24 months due to data quality concerns, and seven reporting PCTs in London have not published PCV booster at 24 months for similar reasons. In addition, the child health system for Northern Ireland has recently upgraded its software to include scheduling of the new PCV and Hib/MenC immunisations. Prior to the introduction of this development, returns from GP practices may have been less timely and complete for PCV and Hib/MenC than for scheduled immunisations and this would ultimately have impacted on coverage. However, once the new scheduling software has been in use for a while, it is expected that coverage will increase accordingly. Overall UK coverage for the PCV booster at 24 months was 75.5%, ranging from 90.6% in Scotland to 73.6% in England.

Further improvement in UK coverage of routine PCV vaccine at 12 months was observed compared to the previous quarter, increasing 0.4% to 90.5%.(table 1). Once again, coverage for this vaccine was highest in Scotland at 96.7%, with Wales achieving 95.2% and Northern Ireland 92.1%; within England coverage exceeded 90% in all SHAs except London and South East Coast. The impact of the PCV immunisation programme on invasive pneumococcal disease (IPD) in children under two has already been observed, with a significant reduction in IPD caused by the serotypes included in the vaccine [9].

An additional appointment was added to the schedule at 12 months for the delivery of the Hib/MenC booster. More modest estimates for coverage of this booster vaccine at 24 months were obtained; 78.0% coverage for the UK as a whole, an increase of 2.3% compared to the previous quarter. Although it is too early to draw any firm conclusions, these results are encouraging.

For the fourth successive quarter UK MMR coverage at 24 months decreased slightly, this quarter down 0.2% to 84.1%. Despite increases in five-year coverage for MMR1 (up 0.3% to 88%) and MMR2 (up 1.1% to 75.8%) these levels remain well below the 95% target. Almost 10 years of sub-optimal MMR vaccination coverage across the UK has led to the current number of children susceptible to measles being sufficient to support the continuous spread of measles. The total number of confirmed measles cases in England and Wales to the end of May 2008 was 461 with cases in London exceeding the peak observed in August 2007 [10]. Health services should exploit all possible opportunities to offer MMR vaccine(s) to children of any age who have not received two doses. Greater awareness of the increasing measles incidence by health professionals and the public is essential to control the spread of infection.

Relevant links for country specific coverage data:

England

<http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/immunisation>

Northern Ireland

<http://www.cdscni.org.uk/surveillance/Coveragestats/default.asp>

Scotland

<http://www.show.scot.nhs.uk/scieh/>

Wales

<http://www.wales.nhs.uk/sites/page.cfm?OrgID=368&PID=2278>

Other relevant links

http://www.hpa.org.uk/infections/topics_az/cover/default.htm

<http://www.mmrthefacts.nhs.uk/>

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http://www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Professionalletters/Chiefmedicalofficerletters/DH_4137171
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Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in 2007

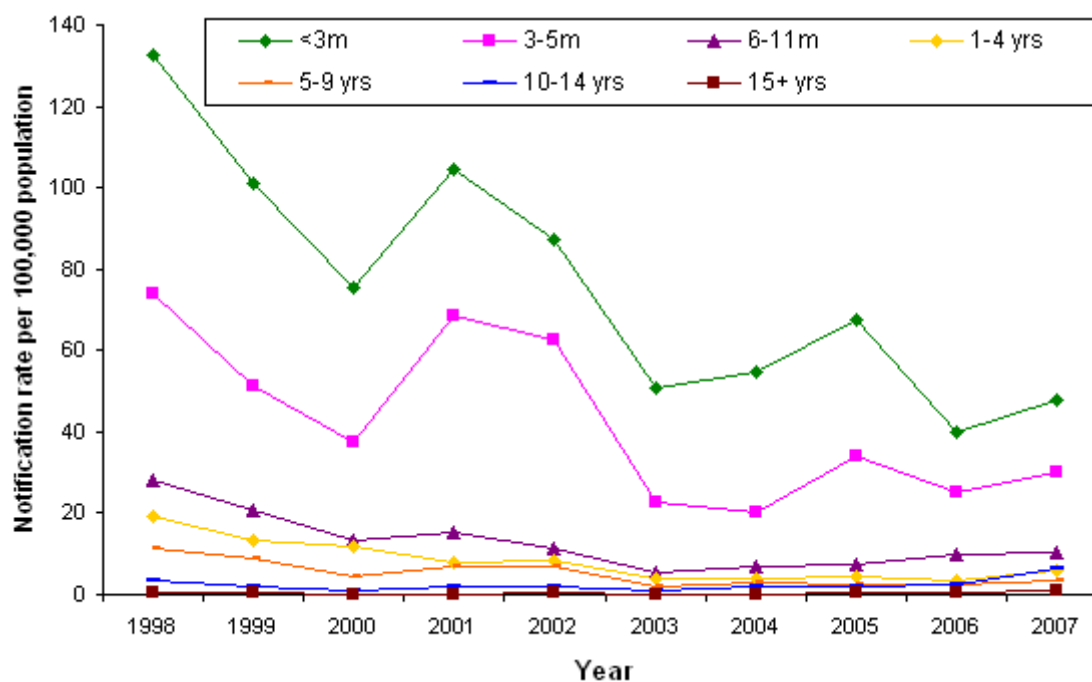
There were 618 laboratory confirmed cases of pertussis (culture, PCR, serology) reported to the pertussis enhanced surveillance programme in 2007 (table 1). This represents a 51% increase on the 408 cases reported in 2006 [1].

Table 1. Laboratory confirmed cases of pertussis in England and Wales in 2007 by quarter

Quarter	Culture Only	Culture and other	PCR Only	Serology Only	Serology and PCR	Total
Q1	12	3	2	76	–	93
Q2	23	4	6	100	–	133
Q3	40	10	19	146	–	215
Q4	17	13	15	131	1	177
Total	92	30	42	453	1	618

Since mid-2006 there has been greater use of serology testing compared to previous years due to both increasing awareness of pertussis occurring in older children and adults [2], and increased awareness of the availability of this diagnostic method [3]. In 2007 serology confirmations made up 73% of laboratory confirmed cases. Whooping cough notification rates for the last 10 years for England and Wales are shown in figure 1 and continue to exhibit a four year cycle superimposed on a continuing downward trend in incidence. The increased use of serology testing has enabled a greater proportion of notified cases to be laboratory confirmed as pertussis.

Figure 1. Whooping cough notification rates in England and Wales 1998-2007 by age group



Note: rates calculated using ONS population estimates; the 2006 population estimate was used for 2007 rate calculations.

The laboratory test used is dependent on the age of the patient and the stage of the illness; this is reflected in the distribution seen in table 2. Culture has high specificity but loses sensitivity as the time since onset of illness increases. PCR testing is offered for acutely ill children aged less than one year old admitted to a paediatric intensive care unit or paediatric ward with respiratory illness compatible with pertussis. In contrast, serology testing is offered for samples taken more than two weeks after onset for any individuals with prolonged cough. However, as recent vaccination (primary and pre-school booster) can confound the serological and oral fluid test results, these investigations are not usually recommended for infants aged under one year, or children aged from 5 to 6 years.

Table 2. Age distribution of cases of pertussis in England and Wales in 2007 by quarter

Age group	Culture only	Culture and other	PCR only	Serology only	PCR and serology	Total
< 3 months	55	7	34	6	1	103
3-5 months	16	1	5	1	–	23
6-11 months	2	0	1	1	–	4
1-4 years	5	1	1	11	–	18
5-9 years	5	1	–	22	–	28
10-14 years	6	2	1	95	–	104
15+ years	3	18	–	315	–	336
Not known	–	–	–	2	–	2
Total	92	30	42	453	1	618

Awareness of pertussis in older age groups has recently increased further due to the launch of a project in June 2007 to follow up notified cases, where laboratory testing has not already been undertaken, using an oral fluid antibody test [4]. These data will be reported on in a future HPR issue.

PCR, serology are provided by the Centre for Infection's Respiratory and Systemic Infection Laboratory (RSIL). The laboratory also encourages submission of all *Bordetella pertussis* isolates for confirmation and national surveillance purposes. The Atypical Pneumonia Unit (APU) is pleased to offer confirmation of identity and serotyping of any *B. pertussis* strains. Further information is available on the HPA website at <http://www.hpa.org.uk/cfi/rsil/bordetella.htm>

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