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News

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- ▶ Investigation into the increase in *Paecilomyces variotii* isolates in the UK from blood culture and other sterile sites
 - ▶ Advice for dentists on single-use of endodontic instruments for all patients to reduce the risk of secondary transmission of vCJD
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Investigation into the increase in *Paecilomyces variotii* isolates in the UK from blood culture and other sterile sites

Following the identification of a possible *Paecilomyces variotii* contamination problem in October 2006 [1], an investigation was launched by the HPA Centre for Infections (Healthcare Associated Infection and Antimicrobial Resistance Department and Mycology Reference Laboratory [MRL]) in an attempt to identify the source of the increase in sterile site isolates.

Three investigative strands are being followed:

1. a questionnaire survey to laboratories reporting cases requesting information about procedures surrounding venepuncture
2. environmental sampling of blood sampling equipment and clinical sundries, swabbing of surfaces and placement of settle plates
3. analysis of NHS Supply Chain data detailing the supply-line of specific equipment used in venepuncture and other clinical sundries for affected and unaffected acute hospital trusts in UK.

Cases, which are defined as confirmed *Paecilomyces* sp isolated from a sterile site by a UK laboratory since 1 July 2006 but not considered clinically significant, were identified through isolate referrals and reports to MRL alerts issued to laboratories through the Regional Microbiology Network (England) and in CDR Weekly [1], and to the relevant contact point in Scotland Wales, and Northern Ireland. Information on any similar contamination problems was requested from other national public health institutes via Eurosurveillance [2].

To date, 94 *Paecilomyces* contaminant isolates from 29 laboratories have been reported, with the majority being isolated between September and November 2006. Numbers of reports have tailed off, with only two being reported in 2007 to date. Most isolates (90) of *P. variotii* were reported from England, with only four from elsewhere in the United Kingdom and Crown Dependencies. No isolates were reported from Scotland or Wales and there were no reports of *Paecilomyces* contaminant problems from the rest of Europe.

Preliminary results from questionnaires received from 23 laboratories showed most isolates were from blood cultures (88%), with the rest isolated from other sterile sites. Samples were drawn across most specialties, reflecting the normal distribution of blood cultures. Concurrent contamination was rarely reported. Further analysis of questionnaire data, environmental sampling, and the supply chain is in progress.

To gauge whether the problem is ongoing, we ask any laboratory that prospectively isolates *Paecilomyces* or has isolated it and not reported this to contact the HPA (details below). If any future *Paecilomyces* contaminants are isolated, we would also request the assistance of laboratories in retrieving equipment and clinical sundries from the ward where the specimen was drawn and undertaking some environmental sampling from this area and/or from where the equipment was stored. A set of instructions will be emailed to any laboratory willing to assist in this process.

Laboratories that isolate any further *Paecilomyces* sp are kindly requested to contact Colin Campbell at the Centre for Infections, tel: 020 8327 7146; email: colin.campbell@hpa.org.uk.

References

1. HPA. Suspected cases of *Paecilomyces variotii* pseudofungaemia. *Commun Dis Rep CDR Wkly*; [serial online] 2006 [accessed 16 April 2007];**16**(44): news. Available at <<http://www.hpa.org.uk/cdr/archives/2006/cdr4406.pdf>>.
2. Lamagni T, Campbell C, Pezzoli L, Johnson E. Unexplained increase in *Paecilomyces variotii* blood culture isolates in the UK. *Eurosurveillance* [serial online] 2006 [accessed 16 April 2007];**11**(11):E061116.2. Available from <<http://www.eurosurveillance.org/ew/2006/061116.asp#2>>.

Advice for dentists on single-use of endodontic instruments for all patients to reduce the risk of secondary transmission of vCJD

The Department of Health has received early findings from research in progress by the HPA, at the Centre for Emergency Preparedness and Response. Results from studies in mice have found transmissible spongiform encephalopathy (TSE) infectivity in dental tissues. The research is ongoing and further advice will be sought from the Spongiform Encephalopathy Advisory Committee (SEAC) and other advisory groups. The results support the possibility that dental files and reamers (most commonly used in root canal treatment) could pose an effective route of transmission of variant Creutzfeldt-Jakob disease (vCJD) infection.

The Chief Dental Officer for England (CDO) has written to all dentists practising in primary or secondary care advising them to restrict endodontic reamers and files to single use for all patients. This is on a precautionary basis in order to reduce any risk of vCJD transmission. He has also advised dentists to ensure that the highest standards of decontamination are observed for all dental instruments and that manufacturers' decontamination instructions are followed [1].

This new guidance from the CDO is an extra precaution resulting from the recent research and the public should be advised to continue to attend their dentist for the treatment that they require.

Advice and guidance from the ACDP TSE Working Group regarding dentistry for individuals with or at-risk of vCJD remain for the present unchanged [2,3].

References

1. Chief Dental Officer for England. Advice for dentists on re-use of endodontic instruments and variant Creutzfeldt-Jakob disease (vCJD). London: Department of Health, 2007. Available at <http://www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Dearcolleagueletters/DH_074001>.

Bacteraemia

Last updated: 20 April, CDR Weekly, Volume 1, No 16

Next update: 18 May 2007

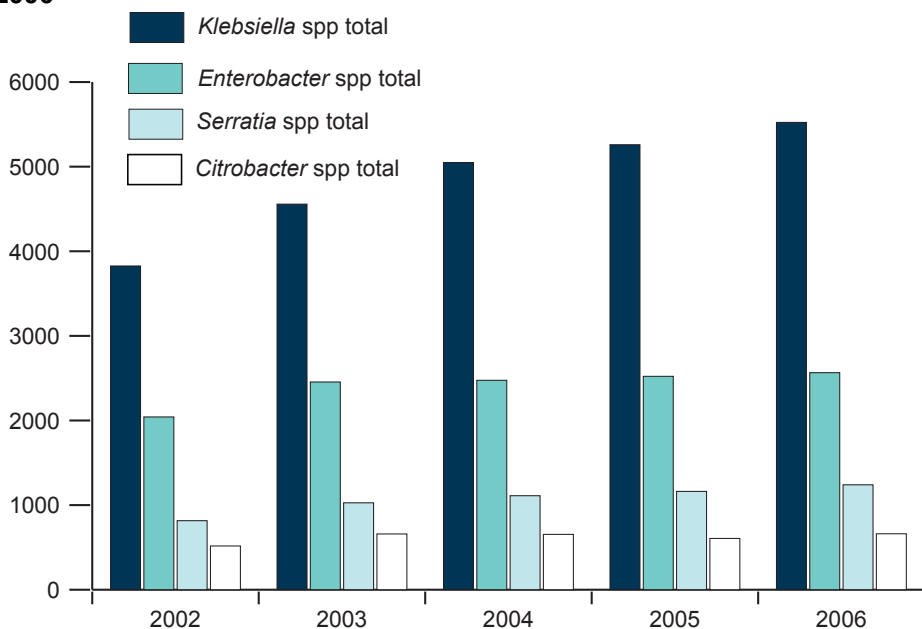
Bacteraemia Routine Data Reports

▮ *Klebsiella*, *Enterobacter*, *Serratia*, and *Citrobacter* spp bacteraemia, England, Wales, and Northern Ireland: 2002 to 2006

Klebsiella, *Enterobacter*, *Serratia*, and *Citrobacter* spp bacteraemia, England, Wales, and Northern Ireland: 2002 to 2006

There was a 4.6% increase in the total number of reports of *Klebsiella* spp, *Enterobacter* spp, *Serratia* spp, and *Citrobacter* spp bacteraemia reported via the voluntary surveillance scheme in 2006 (9989 reports), compared to 2005 (9549 reports) (figure 1). From 2002 to 2006 there has been a 38.7% increase in reports, an increase which is comparable to the 34.1% increase in reports for all bacteraemias (71,053 to 95,300) via the voluntary surveillance scheme during the same time period. The increases may be due to either increased incidence and/or increased ascertainment. The number of reports for 2006 is provisional as of 11 April and is expected to increase due to late reporting.

Figure 1 *Klebsiella* spp, *Enterobacter* spp, *Serratia* spp, and *Citrobacter* spp bacteraemia reports 2002-2006*



*Date extracted 11 April 2007

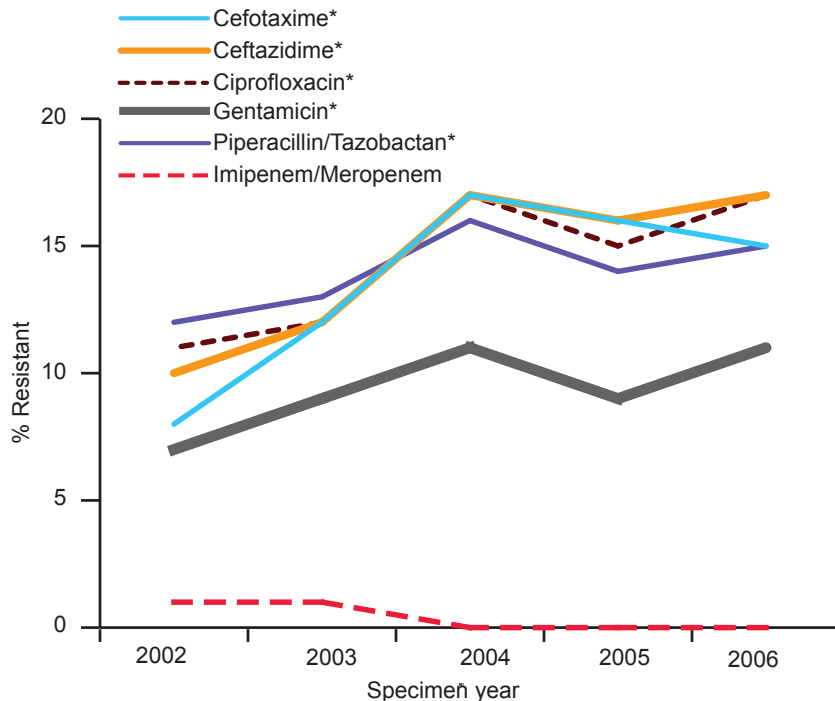
The group of antibiotics to which these four genera are most resistant are the cephalosporins (eg, cefotaxime, ceftazidime) with increased resistance reported for *Klebsiella* spp, *Enterobacter* spp, and *Serratia* spp (figures 2-4). Among reported specimens of *Citrobacter* spp (figure 5), resistance to cefotaxime has decreased during the period 2002 to 2006. Although this is statistically significant, it should be noted there was an increase in resistance to this antibiotic from 2005 to 2006.

Resistance to the carbapenems (eg, imipenem, meropenem) remains low and unchanged at one per cent or less for all four genera. Although these low rates are encouraging, it should be noted that for the carbapenem

ertapenem (not included in these analyses owing to the small numbers tested by reporting laboratories) researchers have reported resistance rates of 40% among *Klebsiella* spp and *Enterobacter* spp isolates [1]. The resistance mechanism is thought to be mediated by a combination of increased cell permeability and beta-Lactamase production (extended-spectrum beta-lactamase [ESBL] and/or AmpC), and while these mechanisms have activity against imipenem or meropenem, they do not confer total resistance.

For *Klebsiella* spp, there have been statistically significant increases in resistance to the cephalosporins cefotaxime (15%) and ceftazidime (17%), as well as to ciprofloxacin (17%), gentamicin (11%), and piperacillin/tazobactam (15%) during this five year period (figure 2). Resistance to ciprofloxacin and/or gentamicin is frequently noticed in cephalosporin-resistant *Klebsiella* spp. Of those specimens reported in 2006 as resistant to cephalosporins, 76% were also resistant to ciprofloxacin, and 58% were resistant to gentamicin. Resistance to cephalosporins among *Klebsiella* spp is thought to be due to ESBLs, and the rise in resistance reflects the increasing occurrence of strains producing the CTX-M-15 type ESBL.

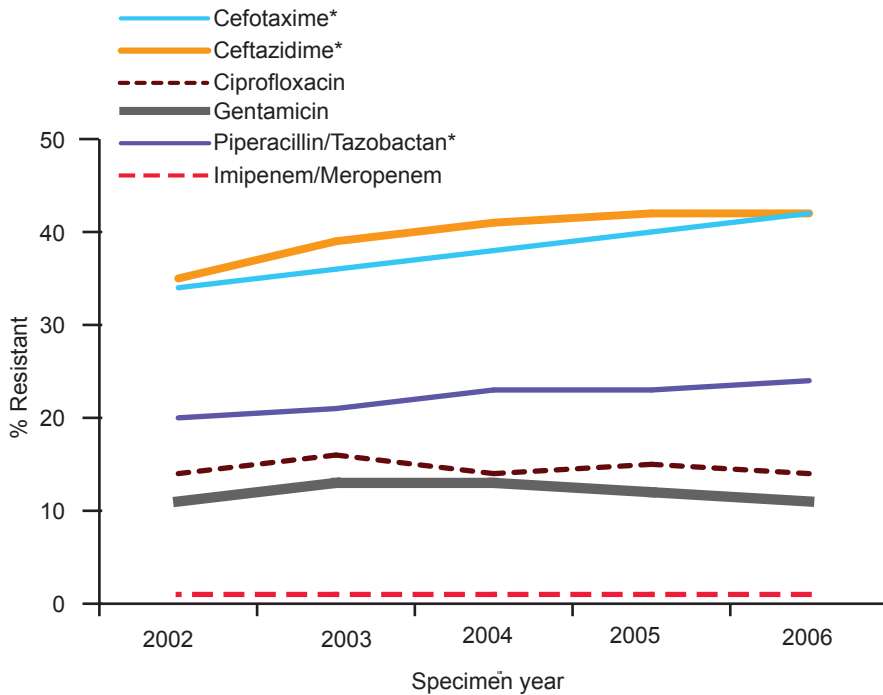
Figure 2 *Klebsiella* spp antibiotic susceptibility trends (2002 to 2006)



* Statistically significant change in susceptibility ($p < 0.05$ for chi-square test for trend).

For *Enterobacter* spp, there have been statistically significant increases in resistance to the cefotaxime (42%) and ceftazidime (42%), as well as to piperacillin/tazobactam (24%) during this period from 2002 to 2006 (figure 3). Although the most common cephalosporin resistance mechanism among *Enterobacter* spp is thought to be hyper-production of chromosomal AmpC beta-lactamases, research published in 2006 suggest about a quarter of cephalosporin-resistant *Enterobacter* spp isolates have ESBLs and a few hyper-produce both AmpC beta-lactamases and ESBLs [2]. It is impossible to assess the prevalence of these different hyper-producing beta-lactamase organisms among the data collected by the HPA's voluntary surveillance scheme, as these data are not routinely generated by hospital laboratories.

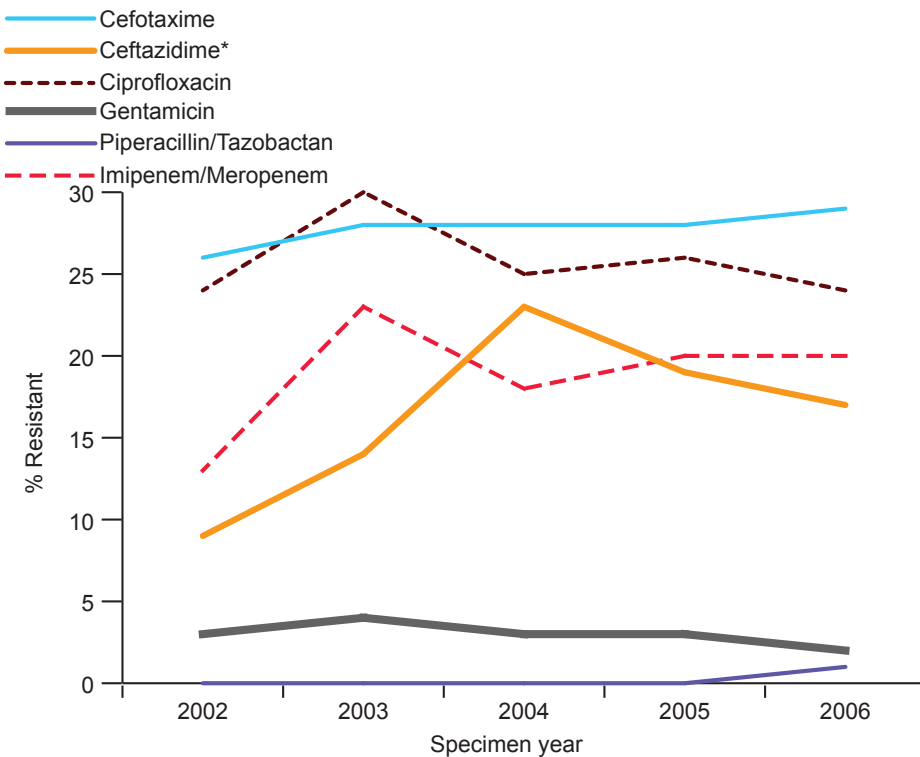
Figure 3 *Enterobacter* spp antibiotic susceptibility trends (2002 to 2006)



* Statistically significant change in susceptibility ($p < 0.05$ for chi-square test for trend).

For *Serratia* spp, the only statistically significant increase in resistance, although from 2002 to 2006, has been to ceftazidime (17%), however, resistance to this antibiotic has decreased from a high of 23% in 2004 during this period (figure 4). The apparent higher resistance to cefotaxime as compared with ceftazidime is most likely due to the fact that AmpC Beta-lactamase produced by *Serratia* spp is more active against cefotaxime than against ceftazidime

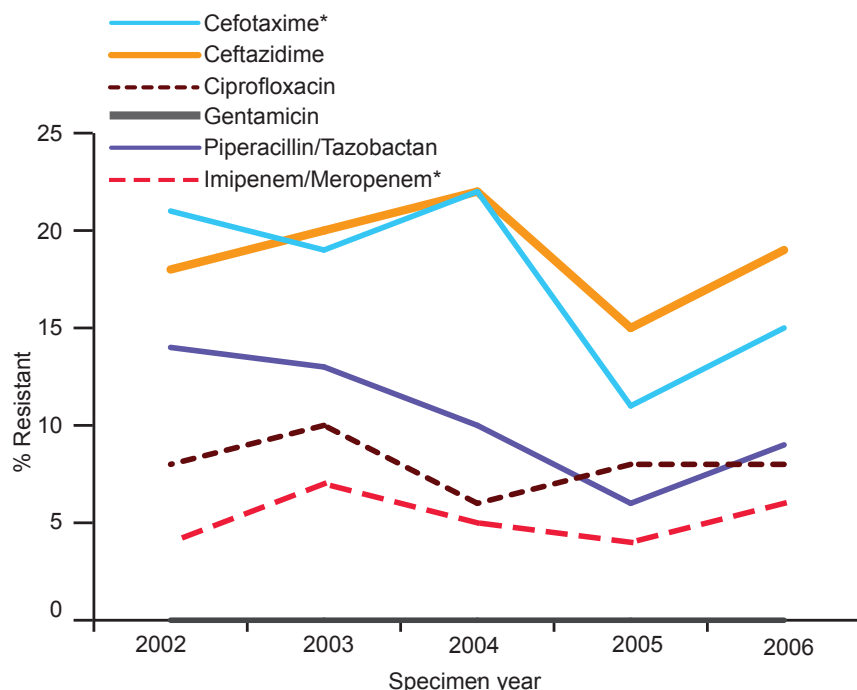
Figure 4 *Serratia* spp antibiotic susceptibility trends (2002 to 2006)



* Statistically significant change in susceptibility ($p < 0.05$ for chi-square test for trend).

For *Citrobacter* spp, there have been statistically significant decreases in resistance to cefotaxime (15%) and piperacillin/tazobactam (9%) from 2002 to 2006 (figure 5). Resistance to cefotaxime, ceftazidime, piperacillin/tazobactam and gentamicin, however, appears to have increased from 2005 to 2006, although these increases are not statistically significant ($P>0.1$). Although many isolates of *Citrobacter* spp reported to HPA are not identified to species level (around 15%), it is known that cephalosporin resistance in *C. freundii* is mediated by mechanisms similar to those found among *Enterobacter* spp (ie, AmpC beta-lactamases and ESBLs), while *C. koseri* cephalosporin resistance is mediated by a chromosomal class A beta-lactamase.

Figure 5 *Citrobacter* spp antibiotic susceptibility trends (2002 to 2006)



* Statistically significant change in susceptibility ($p<0.05$ for chi-square test for trend).

The full report: Further data tables and graphs concerning these species can be viewed on the HPA website at http://www.hpa.org.uk/infections/topics_az/kesc/kesc_menu.htm

References

- Woodford N, Dallow JWT, Hill RLR, Palepou MI, Pike R, Ward ME, *et al*. Ertapenem resistance among *Klebsiella* and *Enterobacter* submitted in the UK to a reference laboratory. *Int J Antimicrob Agents* 2007; **29**(4): 456-9.
- Potz NA, Hope R, Warner M, Johnson AP, Livermore DM, London and South East ESBL Project Group. Prevalence and mechanisms of cephalosporin resistance in Enterobacteriaceae in London and South-East England. *J Antimicrob Chemother* 2006; **58**(2): 320-6.

Zoonoses

Last updated: 20 April , CDR Weekly, Volume 1, No 16

Next update: 27 July 2007

- Common animal associated infections, England and Wales: laboratory reports, weeks 01 to 13/07
- Common animal associated infections, England and Wales: laboratory reports, weeks 39 to 52/06

Common animal associated infections, England and Wales: laboratory reports, weeks 01 to 13/07

Organism	Total reports for weeks 01 to 13		Cumulative totals for weeks 01 to 13	
	2007*	2006	2007*	2006
<i>Borrelia burgdorferi</i> *, †	74	48	74	48
<i>Leptospira hardjo</i> ‡, §	–	–	–	–
<i>Leptospira icterohaemorrhagiae</i> ‡, §	3	1	3	1
<i>Leptospira</i> other ‡ §	5	–	5	–
<i>Pasteurella haemolytica</i>	–	1	–	1
<i>Pasteurella multocida</i>	71	68	71	68
<i>Pasteurella pneumotropica</i>	3	–	–	–
<i>Pasteurella</i> other/spp	26	16	26	16
<i>Toxocara canis</i>	–	–	–	–
<i>Toxocara</i> other/spp	–	–	–	–
<i>Toxoplasma gondii</i>	8	7	8	7
<i>Toxoplasma</i> other/spp	10	13	10	13
<i>Coxiella burnetii</i>	4	2	4	2
<i>Chlamydia (Chlamydophila) psittaci</i>	5	12	5	12
<i>Capnocytophaga</i> spp	2	1	2	1
<i>Mycobacterium marinum</i>	1	5	1	5
Orf virus	–	1	–	1
<i>Echinococcus granulosus</i>	1	4	1	4

* provisional data, † Lyme Diagnostic Unit, ‡ by specimen date, and the HPA's Centre for Infections, § *Leptospira* Reference Unit and the HPA's Centre for Infections.

***Borrelia burgdorferi* (Lyme borreliosis): (74)**

Exposure histories include: F 43y, travel to Finland; M 67y travel to Sweden; F 69y travel to Switzerland; M 3y tick exposure in Germany; F 27y stick bite in the Czech Republic; M 38y, travel to Norway.

Leptospirosis: (8)

***L. icterohaemorrhagiae*: (3)**

Two males aged 25 to 49 years: 1 male aged 50 to 63 years

***Leptospira* spp: (5)**

Four males (one with travel to Africa) aged 25 to 49 years; and one female aged 25 to 49 years.

Pasteurella: (99)

Pasteurella haemolytica: (0)

Pasteurella multocida: (71)

Pasteurella pneumotropica: (3)

Pasteurella spp: (25)

Two males and two females aged under 10 years; three males and two females aged 10 to 23 years; eight males and 18 females aged 25 to 49 years; ten males and 13 females and aged 50 to 63 years; 15 male and 25 females aged over 65 years; and one where sex not stated.

Seven patients reported dog bites, nine patients received cat bites or scratches, and one patient received a bite from an iguana.

Toxocara: (Nil report)

Toxoplasma: (18)

Toxoplasma gondii: (8)

Toxoplasma spp: (10)

Three males and two females aged 10 to 23 years; four males and six females aged 25 to 49 years; one male aged 50 to 63 years; one male and one female aged 65 years and over.

Two patients were known to have lymphadenopathy, one presented with malaise and fever; none of the females were known to be pregnant.

Coxiella burnetii: (4)

One male and one female aged 25 to 49 years; two males aged 50 to 63 years.

All the patients were geographically widespread, no clinical or epidemiological details were provided.

Chlamydia (Chlamydophila) psittaci: (13)

One male and two females and aged 25 to 49 years; two males (one with infection in November 2006) aged 65 years and over.

No bird species or animal contact recorded.

Capnocytophaga: (2)

Capnocytophaga spp: (0)

Two females aged under 10 years.

Mycobacterium marinum: (1)

One male aged 25 to 49 years.

Orf virus: (0)

Echinococcus granulosus: (1)

One male aged over 65 years.

Common animal associated infections, England and Wales: laboratory reports, weeks 39 to 52/06

Organism	Total reports for weeks 39 to 52		Cumulative totals for weeks 01 to 52	
	2006*	2005	2006*	2005
<i>Leptospira hardjo</i> † ‡	2	–	5	2
<i>Leptospira icterohaemorrhagiae</i> † ‡	12	11	19	21
<i>Leptospira</i> other† ‡	12	13	22	33
<i>Pasteurella haemolytica</i>	–	1	5	6
<i>Pasteurella multocida</i>	78	67	334	323
<i>Pasteurella pneumotropica</i>	7	2	17	12
<i>Pasteurella</i> other/spp	15	12	72	76
<i>Toxocara canis</i>	–	–	4	4
<i>Toxocara</i> other/spp	1	–	1	1
<i>Toxoplasma gondii</i>	7	13	26	33
<i>Toxoplasma</i> other/spp	6	22	66	71
<i>Coxiella burnetii</i>	6	3	23	17
<i>Chlamydia (Chlamydophila) psittaci</i>	7	21	31	59
<i>Capnocytophaga</i> spp	3	4	10	13
<i>Mycobacterium marinum</i>	6	2	27	20
Orf virus	1	–	2	1
<i>Echinococcus granulosus</i>	3	6	13	15

* provisional data, † by specimen date, ‡ Leptospira Reference Unit and the HPA's Centre for Infections.

Leptospirosis: (26)

***L. icterohaemorrhagiae*: (12)**

One female and one male aged 15 to 23 years; five males aged 25 to 49 years; four males aged 50 to 63 years; and one male aged over 65 years.

***Leptospira hardjo*: (2)**

One male aged 25 to 49 years; and one male aged 50 to 63 years.

***Leptospira* spp: (12)**

Six males aged 25 to 49 years; three males and one female aged 50 to 63 years; and two males aged 65 years.

Pasteurella: (100)

***Pasteurella haemolytica*: (0)**

***Pasteurella multocida*: (78)**

***Pasteurella pneumotropica*: (7)**

***Pasteurella* spp: (15)**

Two females and two males aged under 10 years; two females and three males aged 10 to 23 years; 19 females and nine males aged 25 to 49 years; nine females and 11 males aged 50 to 63 years; 32 females and nine males aged over 65 years; and one where age and sex not stated.

Toxocara: (1)

One male aged 15 to 23 years.

Toxoplasmosis: (13)

***Toxoplasma gondii*: (7)**

One male aged under 10 years ; one male aged 15 to 23 years; two males aged 25 to 49 years; one male aged 50 to 59 years, one female aged over 65 years; and one where sex not stated.

***Toxoplasma* spp: (6)**

Three females aged 25 to 49 years; three females aged 50 to 63 years.

***Coxiella burnetii:* (6)**

Three males aged 25 to 49 years; and three males aged 50 to 63 years.

***Chlamydia (Chlamydophila) psittaci:* (7)**

One male and three females aged 25 to 49 years; two males and one female aged 50 to 59 years.

***Capnocytophaga spp:* (3)**

One female age under 10 years; one male aged 25 to 49 years; one male aged over 65 years.

***Mycobacterium marinum:* (6)**

One female aged 15 to 23 years; two males aged 25 to 49 years; three males aged 50 to 63 years.

Orf: (1)

One male aged 25 to 49 years.

***Echinococcus granulosus:* (3)**

One male aged 15 to 23 years; and one female and one male aged over 65 years.