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▾ A case of diphtheria caused by toxigenic *Corynebacterium ulcerans*

▾ Variant Creutzfeldt-Jakob disease in the United Kingdom and elsewhere: situation at the end of 2005

▾ A case of diphtheria caused by toxigenic *Corynebacterium ulcerans*

On 17 January 2006 a diphtheria toxin producing strain of *Corynebacterium ulcerans* was confirmed in a woman from Cheshire. This was confirmed by the Health Protection Agency Respiratory and Systemic Infection Laboratory (RSIL), Centre for Infections, (WHO Collaborating Centre for Diphtheria) from throat swabs and clinical samples.

The woman had been recently hospitalised with a two day history of malaise, sore throat and a change in the sound of her voice. She also reported feeling that her throat was closing, causing difficulty in breathing. On examination she had a swollen neck and post pharyngeal area, cervical lymphadenopathy, and a sero-sanguinous nasal discharge. She had started angiotensin-converting enzyme (ACE) Inhibitors in the previous six months and treatment with antihistamines and steroids for a presumed diagnosis of angioneurotic oedema.

The patient's condition deteriorated over the next two days and a tracheostomy was carried out. During the procedure a grayish-white membrane was seen covering the pharynx and this, linked to an elevated white blood cell count and other features of the clinical presentation, raised the possibility of diphtheria.

Based on the clinical diagnosis, antibiotics and antitoxin were given and the consultant in communicable disease control (CCDC) convened an outbreak control meeting. Given the strong probability that this could be a toxigenic strain of diphtheria it was decided to instigate control measures while laboratory confirmation was being sought. Close hospital and community contacts were identified and nose and throat swabs taken. Close contacts were offered both oral erythromycin to clear carriage, and booster Td/IPV vaccine (where appropriate).

Efforts to trace the source of the infection are continuing. There is no history of foreign travel and swabs from close contacts have proved negative. Samples of unpasteurised milk and swabs from domestic animals are being taken on the farm where the case had recently stayed with her family. The patient remains unwell in the intensive care unit.

UK Epidemiology of *C. Ulcerans*

C. ulcerans produces exactly the same toxin as *C. diphtheriae* and infection may present as full-blown diphtheria, as seen in this case. During the period 2000 to 2005, 18 cases of toxigenic *C. ulcerans* have been documented in the UK. There was one death in an elderly female in 2000, due to toxigenic *C. ulcerans*. Although exposure to raw dairy products is the most widely recognised risk factor, most cases, including the fatal case, have had no association with a farming community or through the consumption of raw dairy products. From 2002 to date, the organism has also been isolated from several domestic cats and one dog with respiratory discharges within the United Kingdom and other European countries suggesting a possible novel reservoir for this organism. Molecular typing studies on a large collection of isolates have revealed a predominant genotype circulating within Europe, with strains isolated from SOME domestic cats exhibiting the same type as observed among strains causing human infections (1).

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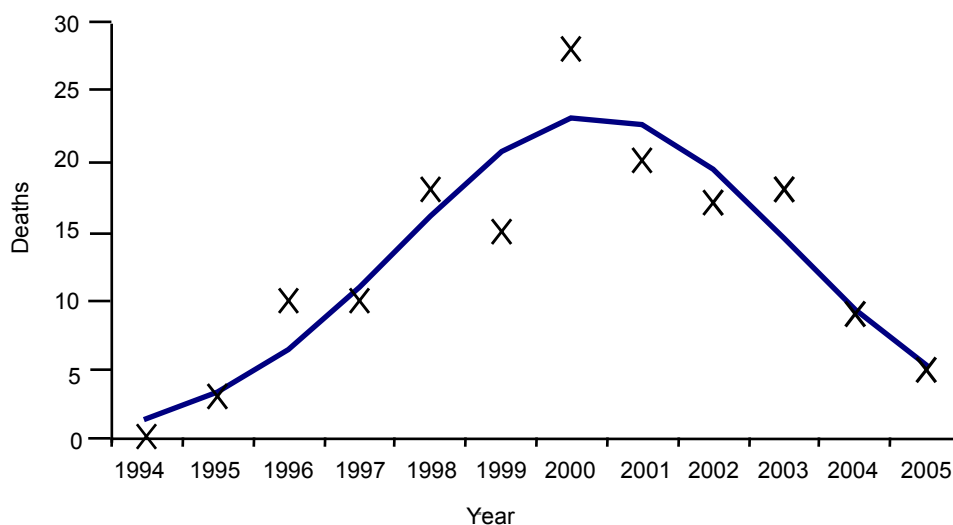
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Variant Creutzfeldt-Jakob disease in the United Kingdom and elsewhere: situation at the end of 2005

A cumulative total of 159 cases of variant Creutzfeldt-Jakob disease (vCJD) had been reported in the UK by the end of December 2005, of whom 153 had died. Outside the UK, the numbers remain small with 15 cases in France, four in the Republic of Ireland, two in the United States, and one each in Canada, Italy, Japan, the Netherlands, Portugal, Saudi Arabia, and Spain (1).

Recent data published by the National CJD surveillance unit shows that, in the United Kingdom (UK), a total of five deaths from vCJD were reported in 2005, four less than the previous year's total of nine (2). Results from modelling the incidence of deaths indicate that the current epidemic wave reached a peak of 28 deaths in 2000, and has since declined (figure). Extrapolating this trend gives an estimate of two deaths in the next 12 months (95% prediction interval 0 to 5). With six cases alive at the end of 2005, however, a prediction of two deaths is likely to be an underestimate.

Figure vCJD deaths by year and fitted quadratic model for the incidence trend



It is important to note that, to date, all vCJD cases have been methionine homozygote at codon 129 of the prion protein gene. Preclinical vCJD infection has, however, been reported in a heterozygous patient after blood transfusion from a donor who subsequently developed vCJD (3). Although the initial epidemic wave is now in decline, it is possible that there will be further epidemics of cases in other genetic groups. There is also the possibility of continuing person-to-person transmission through certain forms of healthcare (for instance, in relation to surgery, blood transfusion, or treatment with plasma products). It is essential, therefore, to maintain and promote active surveillance of CJD to investigate these possibilities.

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Immunisation

Last updated: **26 January 2006**, Volume 16, No. 4

Next update due: **23 February 2006**

Immunisation Routine Data Reports

▾ [Laboratory reports of invasive meningococcal infections, England and Wales: weeks 41 to 45](#)

▾ [Laboratory reports of hepatitis A infection in England and Wales: July to end of September 2005](#)

▾ [Laboratory reports of hepatitis C infection in England and Wales: July to end of September 2005](#)

▾ [Laboratory reports of invasive meningococcal infections, England and Wales: weeks 41 to 45](#)

	Method of diagnosis			Total reports	Cumulative*
	CSF and blood Culture	Non-culture	Other sites	41-45/05	Total to week 45/2005
Group A	–	–	–	–	1
B	52	70	7	129	1107
C	–	–	–	–	24
W135	3	–	1	4	26
X	–	–	–	–	–
Y	2	1	–	3	36
Z	–	–	–	–	–
29E	–	–	–	–	1
Ungroupable	–	–	–	–	–
Ungrouped	–	6	–	6	44
Total	57	77	8	142	1239

*Latex antigen, microscopy, polymerase chain reaction combined Health Protection Agency Centre for Infections data and Meningococcal Reference Unit data.

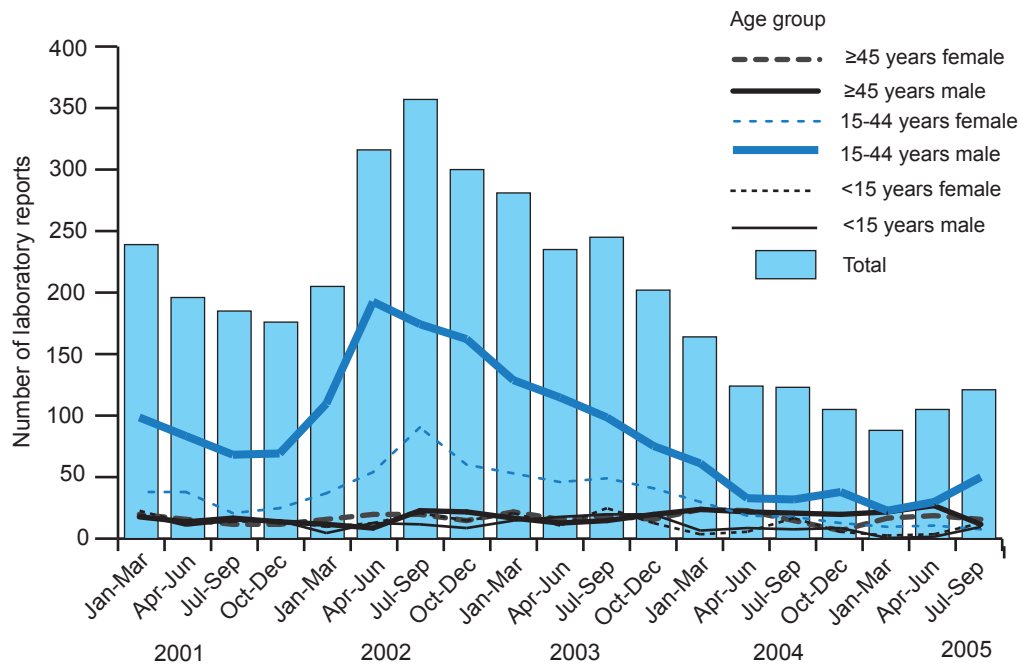
▣ Laboratory reports of hepatitis A infection in England and Wales: July to end of September 2005

During the third quarter of 2005 (*ie*, July to end of September 2005), 124 laboratory reports of hepatitis A were made to the Health Protection Agency Centre for Infections (CfI), 5% (7) fewer than in the equivalent quarter of 2004 [1]. This follows the trend of an overall decrease in the number of cases compared to the equivalent quarters in the previous year. Forty-two per cent (52) were men aged 15 to 44 years (table) and the majority of cases occurred in the North West region. Three people acquired their infection abroad (Tunisia, Pakistan, and the Dominican Republic) and no infections were reported to be in injecting drug users (IDUs). The overall number of cases of hepatitis A in the third quarter of 2005 increased by 12% (13), compared to that of the second quarter of 2005 [2]. Female age groups have remained similar compared to last quarter with a slight increase in the under 15 years age group and a decrease in the 15 to 44 years and over 45 years age groups. The male over 45 age group decreased by 52% (15) on last quarter. The male under 15 years age group increased slightly (by nine cases), however, the main increase was in the male 15 to 44 years age group which increased by 63% (20) on last quarter (figure). Ad-hoc regional reports indicate further travel related cases occurred in this quarter (two cases from Ibiza and one from India), one outbreak in men who have sex with men and other isolated incidents.

Table Laboratory reports of hepatitis A infection in England and Wales: July to end of September 2005

Age Group (years)	Male	Female	Not Known	Total
01-04	3	5	–	8
05-09	5	4	–	9
10-14	7	3	–	10
15-24	18	6	3	27
25-34	16	3	–	19
35-44	18	1	–	19
45-54	7	3	–	10
55-64	5	3	–	8
≥65	2	12	–	14
Total	81	40	3	124

Figure Number of laboratory reports of hepatitis A by age group and sex: January 2001 to September 2005



Under-reporting and variations in regional reporting are continuing in the absence of a strategy or action to improve national surveillance data quality. A total of 133 cases of hepatitis A were formally notified in the third quarter of 2005, 7% more than laboratory confirmed. The number of notifications exceeded the number of laboratory reports for five English regions and Wales, while the number of laboratory reports exceeded the number of notifications for four English regions. Discrepancy between notifications and laboratory reports was highest in London, where 19 cases were formally notified and only five laboratory reports were made, and the South East with 13 cases notified and only four laboratory reports. Conversely, in the North West region there were 41 laboratory reports and only 25 notifications.

One death occurred in this quarter for which hepatitis A was given as the final underlying cause on the medical certificate of cause of death (the Office for National Statistics data). This compares with between one and five deaths per year in the period 2001 to 2004. Additional deaths occurred where hepatitis A was given as a contributory cause of death.

Priorities for improving control of hepatitis A include enhancing risk-factor reporting by clinicians to laboratories and from laboratories to CfI, increasing the speed and rates of notification of cases by clinicians to Health Protection Units, obtaining greater participation in laboratory reporting of cases, and providing better detection and definition of outbreaks.

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2. Health Protection Agency. Laboratory reports of hepatitis A, England and Wales: April to June 2005. *Commun Dis Rep CDR Wkly* [serial online] 2005 [cited 26 Jan 2006]; **15**(38): Immunisation. Available at <<http://www.hpa.org.uk/cdr/archives/2005/cdr3805.pdf>>.

Laboratory reports of hepatitis C infection in England and Wales: July to end of September 2005

A total of 2089 reports of hepatitis C infection were reported in the third quarter of 2005 (*ie*, July to end of September 2005) (table). Sixty-four per cent (1346/2089) of the cases occurred in the 25 to 44 years age group. The overall ratio of males to females is approximately 2:1.

Table Laboratory reports of hepatitis C infection in England and Wales: July to end of September 2005

Age Group (years)	Male	Female	Not Known	Total
01-04	9	13	2	24
05-09	1	1	1	3
10-14	1	–	–	1
15-24	109	73	6	188
25-34	460	209	33	702
35-44	458	162	24	644
45-54	229	88	17	334
55-64	62	32	12	106
≥65	36	29	6	71
Not Known	9	4	3	16
Total	1374	611	104	2089

HIV/Sexually Transmitted Infections (STIs)

Last updated: **26 January 2006**, Volume 16, No. 4

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HIV/STIs Reports

▾ [HIV and AIDS in the United Kingdom quarterly update: data to the end of December 2005](#)

▾ [HIV Drug Resistance in the United Kingdom: data to end of 2004](#)

▾ [HIV and AIDS in the United Kingdom quarterly update: data to the end of December 2005](#)

HIV and AIDS in the United Kingdom quarterly update: data to the end of December 2005
HIV and AIDS in the United Kingdom quarterly update: data to the end of December 2005 United Kingdom (UK) data from the Health Protection Agency Centre for Infections, Health Protection Scotland, and the Institute of Child Health (London).

The total number of HIV diagnoses for 2005 is expected to continue to increase, exceeding 7700 diagnoses by the time all reports have been received. The estimate of the total reports expected for 2005 is made by adjusting the year-end figure for 2005 with a multiplier reflecting five-year average reporting delay. Most of the increase in HIV diagnoses between 2004 and 2005 is expected to be due to a continued increase in HIV diagnoses among men who have sex with men (MSM), with 2453 diagnoses predicted for 2005 (table 1). Total diagnoses among heterosexual men and women are expected to remain high but relatively stable, with 4392 diagnoses predicted for 2005, compared to 4347 in 2004. Diagnoses in injecting drug users are also expected to increase in 2005, reaching an estimated 182 diagnoses.

Unless otherwise indicated, the remaining figures in this report have not been adjusted for reporting delay. The 5560 new diagnoses of HIV infection diagnosed and reported during 2005, brings the cumulative total of HIV diagnoses in the United Kingdom (UK) to 76,850 since surveillance began in 1982. To date, 21,898 individuals have been diagnosed with AIDS, of whom 13,346 (61%) have died. A further 3382 individuals have died without having had a report of an AIDS-defining condition. There were 474 new AIDS diagnoses in 2005 reported to date.

Route of Infection

Table 1 describes new diagnoses of HIV infection over time by probable route of infection. Of the 5560 diagnoses reported for 2005, 52% (2878) were acquired through sex between men and women, 31% (1712) through sex between men, 2% (112) through injecting drug use, and 1% (79) through other routes. Seven hundred and seventy-two reports (14%) are awaiting further follow-up to determine probable route of infection (406 men and 366 women). There continue to be more heterosexually-infected women diagnosed than men, with 1.5 women reported for every man in 2005. The proportion of diagnoses among women continues to rise slowly, with women and girls accounting for 34% (1890) of all diagnoses, so far, in 2005. Sixty-four individuals (1 %) diagnosed in 2005 were probably infected through mother-to-child transmission. Most of these children were aged over one year at diagnosis and many were infected abroad, mainly Africa, where there is a higher HIV prevalence than in the UK.

Table 1 New diagnoses of HIV in the UK by infection route, sex and year of diagnosis: data to end of December 2005

click icon to view full table

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Numbers of HIV diagnoses among MSM have risen steadily in recent years, with 1712 diagnoses for 2005 reported so far. This increase is likely to be due to more HIV testing among MSM and also ongoing transmission of HIV. MSM continue to be the group most at risk of acquiring HIV within the UK. In 2005, where probable country of infection was reported (986), 84% (831) of MSM were probably infected in the UK, compared with 14% (406/2455) of heterosexual men and women. Table 2 provides more detailed information about infections acquired through sex between men and women. Less than one per cent (24/2455) of individuals diagnosed in 2005 and infected through heterosexual contact had a 'high risk' partner (for example a partner who had injected drugs). For 87% (2127/2455) there was no evidence of a high risk partner, but information indicated that these individuals were probably infected abroad. Of this group, 89% (1899/2127) had probably been infected in Africa. Although these figures include individuals infected while travelling or living abroad, for the most part they represent those who were born in and have migrated to the UK from the country where they were infected.

Table 2 New diagnoses of HIV in those infected through sex between men and women by year of diagnosis: data to end of December 2005

click icon to view full table

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Region of diagnosis

The epidemic continues to be geographically concentrated, with London and the South East accounting for 56% (3112/5560) of all diagnoses reported for 2005. In 2005, 6% of diagnoses were made in the following regions: West Midlands (343), East of England (338), and East Midlands (315). Regional figures are particularly sensitive to reporting delay, and so these patterns for 2005 may change as further reports are received during 2006.

Table 3: HIV infected individuals by country, region and year of HIV diagnosis, UK data to end of December 2005

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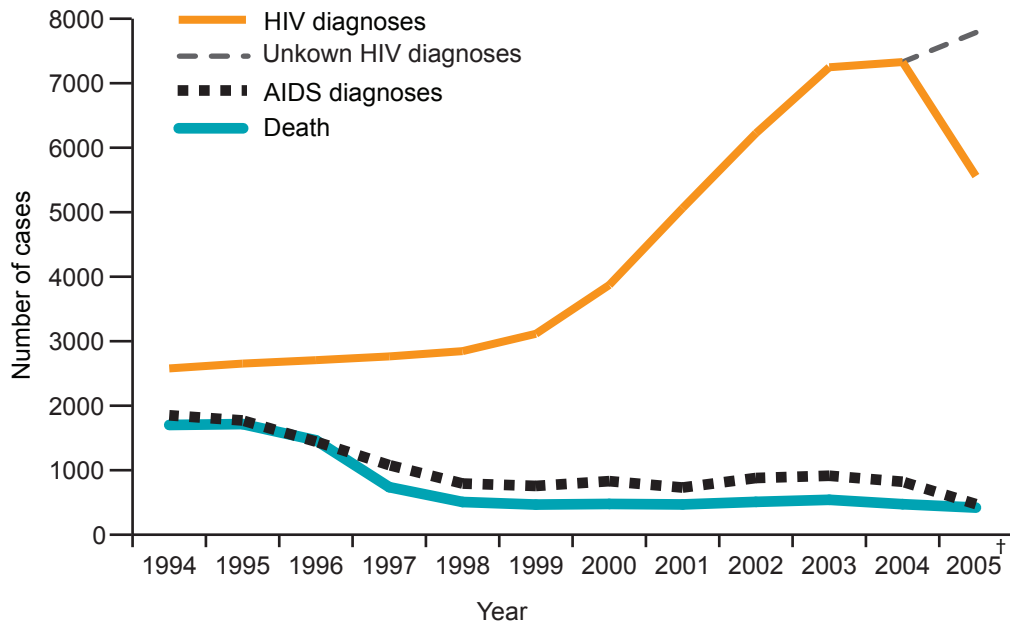
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The number of AIDS diagnoses and deaths in HIV-infected individuals have declined since the introduction of highly active anti-retroviral therapies (HAART) in the mid-1990s (figure). There has also been a reduction in AIDS reporting since the advent of HAART, and AIDS defining illnesses are now more likely to be reported if the HIV and AIDS diagnosis are simultaneous*. In 2005, of the 474 AIDS diagnoses so far reported, 85% (404) were made at the same time as the HIV diagnosis. In addition to reporting of deaths from clinicians, mortality data are obtained from the Office for National Statistics in England and Wales and the General Register Office in Scotland. So far in 2005, 420 deaths have been reported, of which 177 (42%) had been previously reported with AIDS. Reporting of deaths is subject to substantive reporting delay. A comparison with patterns of mortality reporting for the previous five years suggests that the number of deaths for 2005 will eventually exceed 500.

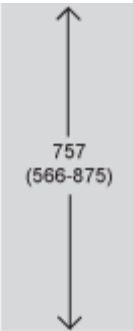
* Simultaneous HIV and AIDS diagnoses are calculated as an individual who was diagnosed with AIDS within three months of their HIV diagnosis.

Figure HIV diagnoses and deaths in HIV infected individuals, UK reports to end of December 2005



†Numbers, particularly for recent years, will rise as further reports are received.

Table 1 New diagnoses of HIV in the UK by infection route, sex and year of diagnosis: data to end of December 2005

How infection was probably acquired	1995 or Earlier	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005 Extrapolated* (range)	Actual†	Total
Sex between men	18,919	1556	1416	1372	1373	1520	1769	1892	2024	2214	2453 (2226-2688)	1712	35,767
Sex between men and women	5463	839	1016	1170	1445	2021	2899	3800	4503	4347	4392 (4000-4490)	2878	30,381
Men	2525	358	453	525	604	761	1076	1388	1589	1587	1592 (1516-1664)	1053	11,919
Women	2938	481	563	645	841	1260	1823	2412	2914	2760	2768 (2592-2847)	1825	18,462
Injecting drug use	3048	174	171	132	113	114	133	115	149	131	182 (169-194)	112	4392
Blood transfusion or blood factor products	1574	21	29	11	22	25	25	34	34	21		12	1808
Mother to infant	366	62	82	100	77	104	101	121	144	128		64	1349
Other	28	3	1	4	8	6	9	6	6	5		3	79
Undetermined	545	32	29	30	26	28	29	31	35	22		7	814
Follow-up ongoing	148	19	19	26	49	53	97	225	352	459		772	2219
Total‡	30,126	2687	2764	2846	3115	3818	5063	5999	6895	7328	7786 (7061-8173)	5560	76,850

* Extrapolated using a five-year average reporting delay, minimum and maximum annual reporting delay for any given year.

† Numbers will rise as further reports are received.

‡ Forty-one people whose sex was not reported are included in this total: seven infected through sex between men and women, one blood/ blood product recipients, four infected through mother to infant transmission and 29 for whom likely route of infection is not known.

Table 2 New diagnoses of HIV in those infected through sex between men and women by year of diagnosis: data to end of December

How HIV infection was probably acquired		1995 or Earlier	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005*	Total
Exposure to 'high risk' partner(s) - partner infected through:	Sexual intercourse between men	179	11	12	12	12	13	27	31	18	22	5	342
	Injecting drug use	430	43	62	58	35	28	44	31	34	30	17	812
	Blood factor treatment (eg for haemophilia)	73	8	1	1	1	2	0	2	8	0	1	97
	Blood/tissue transfer (eg transfusion)	16	3	5	3	3	1	4	2	0	1	1	39
Exposure to presumed heterosexually infected partner(s):													
	Exposure abroad:												
	Africa	3,551	553	646	757	1005	1520	2251	2982	3494	3207	1899	21,865
	Latin America / Caribbean	125	24	30	33	66	69	94	143	158	129	50	921
	Asia	152	44	53	79	76	112	101	123	144	169	102	1155
	North America	89	8	11	14	7	8	9	6	7	5	11	175
	Europe	242	42	46	44	51	43	48	66	87	86	57	812
	Australasia	10	1	2	4	7	2	5	3	5	0	2	41
	Country(ies) not known	31	8	3	15	0	2	1	1	1	3	6	71
Exposure in the UK to partner(s) presumed infected:													
	Outside Europe	209	45	79	87	97	138	186	242	304	338	191	1916
	Within Europe	280	37	53	48	58	56	67	52	77	66	72	866
	In country(ies) not known	48	7	4	6	8	7	15	32	38	70	131	366
Partner(s) exposure category undetermined:													
	Investigation continuing	2	1	1	7	15	15	45	78	126	214	331	835
	Investigation closed	31	4	8	3	5	5	2	6	2	7	2	75
Total		5468	839	1016	1171	1446	2021	2899	3800	4503	4347	2878	30,388

* Numbers will rise as further reports are received.

Table 3 HIV infected individuals by country, region and year of HIV diagnosis, UK data to end of December 2005

Country and region of diagnosis	1995 or Earlier	1996	1997	1998	1999	2000	2001	2002	2003	2004*	2005*	Total	
England	North East	440	24	35	22	30	37	56	99	148	139	100	1130
	Yorkshire & Humberside	949	90	84	85	91	103	184	312	439	456	343	3136
	East Midlands	602	50	46	62	90	103	198	257	332	360	315	2415
	East of England	769	57	75	88	98	186	316	489	545	570	338	3531
	London	18329	1707	1738	1769	1972	2336	2785	2989	3266	3129	2487	42,507
	South East	2423	226	212	207	218	363	497	709	864	854	625	7198
	South West	987	79	92	104	105	104	136	179	207	225	199	2417
	West Midlands	952	63	101	112	104	178	215	423	496	486	343	3473
	North West	1745	189	149	189	208	239	420	431	534	600	322	5026
England (total)	27,196	2,485	2,532	2,638	2,916	3,649	4,807	5,888	6,831	6,819	5,072	70,833	
Wales	458	36	46	30	34	45	63	78	109	104	99	1102	
Northern Ireland	146	16	9	9	14	19	20	27	32	63	53	408	
Scotland	2286	163	169	163	150	157	168	224	271	338	333	4422	
UK Total	30,086	2,700	2,756	2,840	3,114	3,870	5,058	6,217	7,243	7,324	5,557	76,765	
Channel Islands/ Isle of Man	40	6	8	6	1	1	5	7	4	4	3	85	
UK total HIV diagnoses	30,126	2,706	2,764	2,846	3,115	3,871	5,063	6,224	7,247	7,328	5,560	76,850	
UK total AIDS diagnoses	13,178	1,443	1,079	793	756	830	731	879	914	821	474	21,898	
UK total deaths†	10,420	1464	737	507	467	477	469	509	541	473	420	16,728	

* Numbers will rise as further reports are received.

† Total includes 244 deaths where year of death is not known (including all deaths in children).

HIV Drug Resistance in the United Kingdom: data to end of 2004

Introduction

This report is an update on the prevalence of HIV drug resistance in the United Kingdom (UK) in both antiretroviral-experienced and antiretroviral-naive individuals (1). Data on drug-naive individuals is critical to understanding the epidemiology of transmitted drug resistance (2); data on drug-experienced individuals provides indirect evidence on the contribution of drug resistance to virological failure and the requirement for new classes of drugs for those patients infected with multi-class drug resistant virus (3). Findings are based on genotypic test results reported to the UK HIV Drug Resistance Database, which aims to collect all tests conducted as part of routine clinical care, including samples sent to the HPA Antiviral Susceptibility Reference Unit (2). Participating virology laboratories now provide data on an annual basis.

Resistance is defined as one or more major mutations in the latest (2005) International AIDS Society-USA guidelines (4), plus additional mutations* agreed by the virologists who are members of the UK Collaborative Group on HIV Drug Resistance. Mutations are classified according to the class of drug to which they confer resistance – (a) the nucleoside/nucleotide reverse transcriptase inhibitors (NRTI) (b) non-nucleoside reverse transcriptase inhibitors (nNRTI) (c) protease inhibitors (PI). Although a fourth class of drug (fusion inhibitors) is now available, the relevant part of the HIV genome is not routinely sequenced, and so the available data is highly selective.

Results

The analysis includes resistance tests reported up to the end of 2004, although linkage to clinical data, which is required to determine treatment status, is incomplete for 2004. Individuals known to have been infected vertically and all children aged under 16 years are excluded as they are likely to have different resistance characteristics. Estimates of the prevalence of resistance in drug-naive individuals are based on one (the earliest if more than one) test per patient. Estimates in drug-experienced individuals are based on one (the latest if more than one) test per patient per calendar year.

The number of tests on drug-naive individuals has increased rapidly since 2002 (bearing in mind that 2004 data are incomplete), reflecting British HIV Association guidelines since that time recommending pre-therapy testing for all patients (5). This has been accompanied by a fall in the proportion of samples harbouring resistance mutations. Resistance to any drug class (ie. NRTI, nNRTI, or PI) declined from 16% in 2002, to 12% in 2003 and to 9% in 2004 (figure 1). At the most recent time point, the prevalence of NRTI and nNRTI resistance were similar (approximately 4.5%), whereas PI resistance was the least common (2.1%). Resistance is mainly limited to a single drug class: of the 518 samples that harboured mutations, only 86 (17%) and 41 (8%) showed resistance to two classes or three classes respectively (figure 2). Mirroring general trends, multi-class resistance appeared to be becoming less frequent over time.

Figure 1 Prevalence and characteristics of HIV drug resistance in drug-naive patients by calendar year

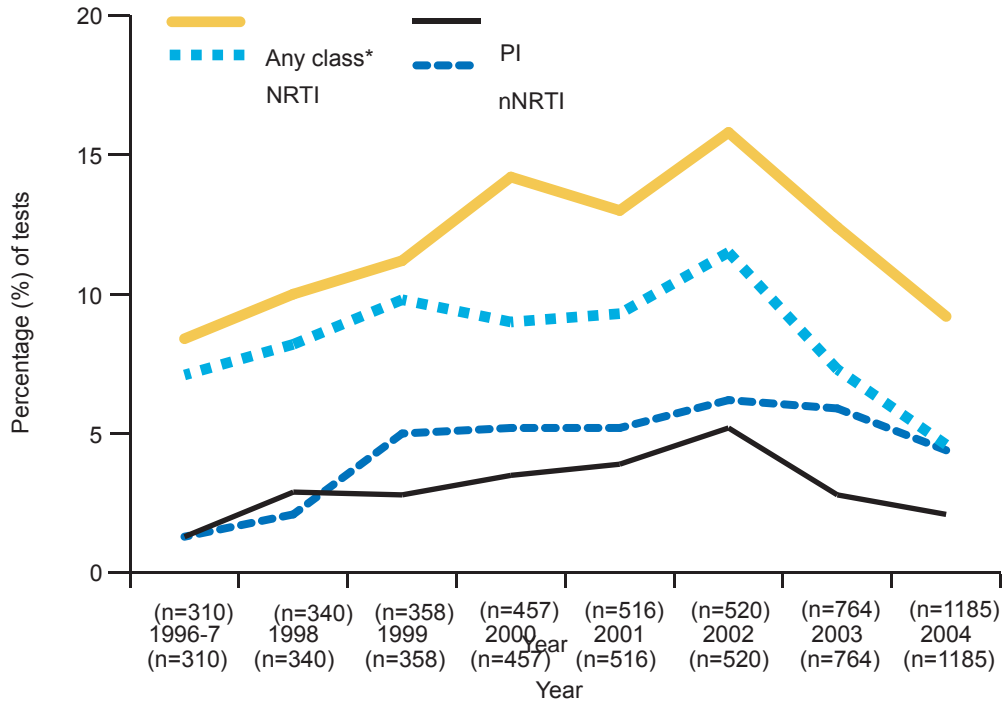
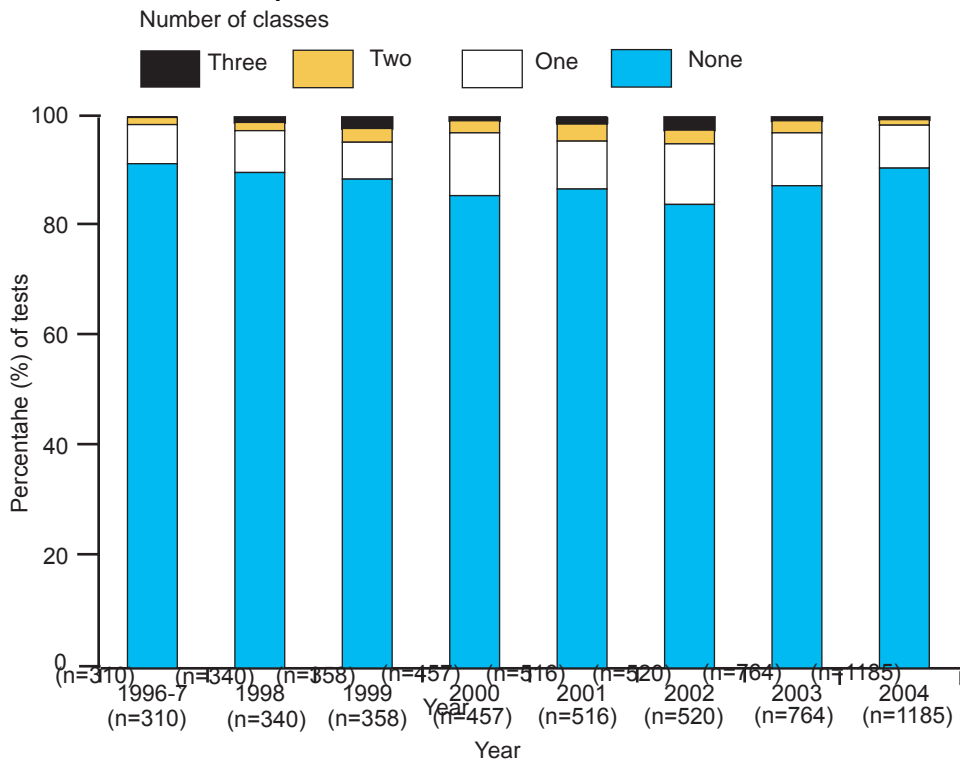


Figure 2 Prevalence of HIV drug resistance in drug-naive patients by calendar year: number of antiretroviral classes compromised



In contrast to drug-naive individuals, the number of tests per year performed on treatment-experienced patients has steadied since 2000. The prevalence of resistance in this group is also exhibiting a downward trend, albeit much more gradually compared with drug-naive individuals (figure 3). The proportion of samples with no evidence of resistance (to any class) was at its lowest in 1999 (22%) and by 2004 had increased to 35% (figure 4). The different drug classes, however, showed different patterns: nNRTI resistance has remained relatively stable, whereas NRTI and PI resistance in particular have declined. The number of individuals infected with triple class resistant viruses, who are difficult to treat (6), has fallen from a peak of around 15% in 1999-2001 to around 8% in 2003-2004.

Figure 3 Prevalence and characteristics of HIV drug resistance in drug-experienced patients by calendar year

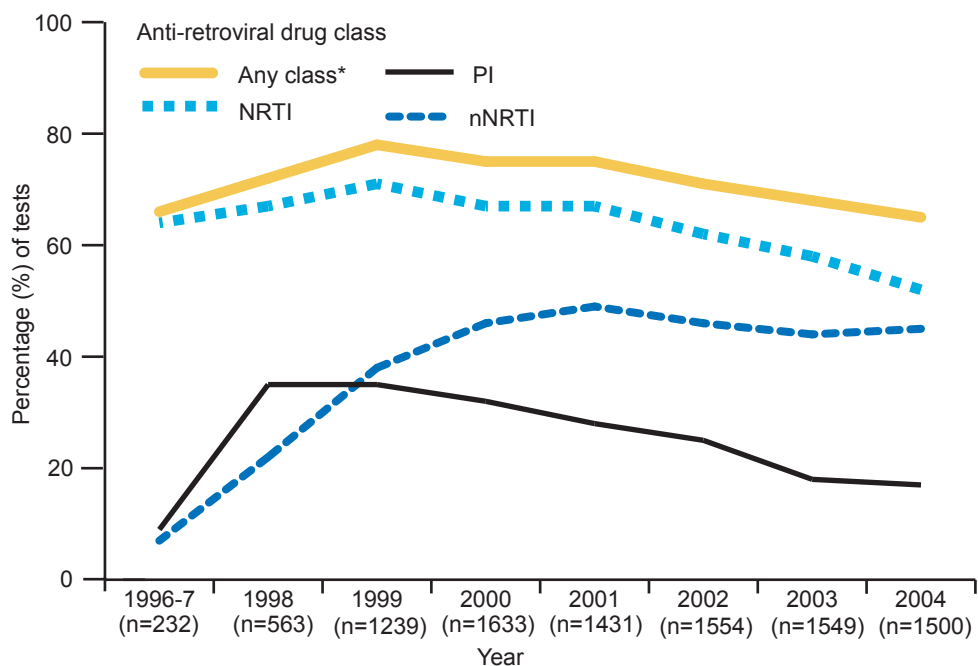
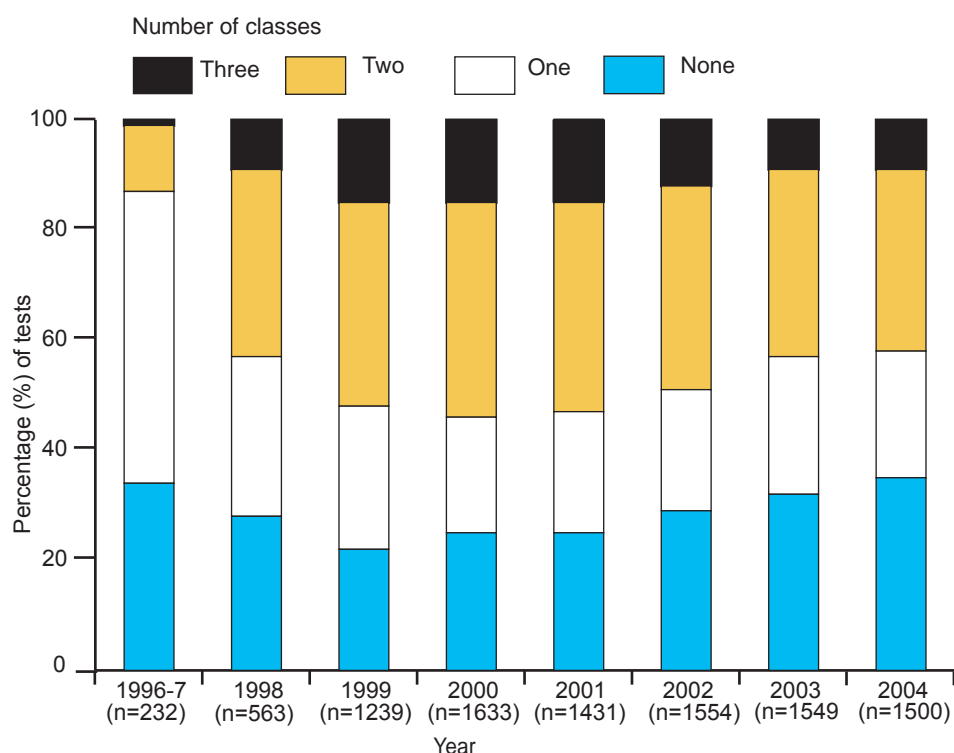


Figure 4 Prevalence of HIV drug resistance in drug-experienced patients by calendar year: number of antiretroviral classes compromised



Discussion

The recent fall in the prevalence of drug resistance among treatment-naive individuals is likely to be due to multiple factors. Prior to 2003, only an estimated 1 in 12 patients received a pre-therapy resistance test, raising the possibility of a strong bias in the selection of patients for testing (2). The expansion of pre-therapy testing has mitigated, although not completely eliminated, this concern. Another explanation for the fall in prevalence is that the classification of the patients' treatment status may have become more accurate over time, although there are no data to support or refute this possibility. Finally, the majority of new HIV diagnoses within the UK are now among those infected in the resource-poor world where availability to antiretroviral therapy is very limited, and it is to be expected that the presence of pre-existing resistance is lower for such individuals than for those infected within the UK. The latest estimate of the rate of transmitted resistance of around 9% accords with data from other European countries (7). Interestingly, the rates of resistance to the NRTI and nNRTI classes have converged to similar values.

There was a small decline in the rate of resistance among treatment-experienced individuals. Over one-third of the tests performed in 2004 showed no significant mutations, suggesting there are important causes of virological failure other than drug resistance. In addition, the marked decline in protease inhibitor resistance is likely due to the almost universal use of ritonavir-boosted protease inhibitors (8). It would be interesting to study the clinical decisions that are made subsequent to a "negative" resistance test. The interpretation of resistance data on treatment-experienced individuals also needs to consider which patients are selected for testing (around 70% of treatment switches occur without reference to resistance testing (3)). For example, the observed trends could be explained by a shift in resistance testing towards patients with less prior exposure to antiretroviral therapy. Longitudinal analytical approaches are required to estimate the burden of drug resistance among the treated population (3).

Finally, it is important to reiterate that the presence of a drug class-specific mutation does not necessarily imply that all drugs within that class are compromised, with the exception of most nNRTI mutations (4).

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Footnote

* In reverse transcriptase, any mutation at G190 or T215. In protease, V32I and I47V/A in combination, or seven or more minor lopinavir mutations, count as a single major protease mutation.

Diary

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 [Reducing healthcare associated infections in renal medicine](#)

 **[Reducing healthcare associated infections in renal medicine](#)**

The Department of Health presents this **free** one day conference: *Reducing healthcare associated infections in renal medicine* on February 16, 2006 : Euston Novotel, London.

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Janice Stevens - Director MRSA/Cleaner Hospital Programme, DH

Professor Brian Duerden - Inspector of Microbiology, Department of Health

Dr Don Goldman - Senior Vice President, Institute for Healthcare Improvement

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