Other diseases

Legionnaires' disease	**85**
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Rabies	**92**

Legionnaires' disease

KEY POINTS

- In general, just under half of all Legionnaires' disease cases reported in England, Wales, and Northern Ireland are acquired abroad.
- The number of cases reported in the UK and in the rest of Europe that were acquired abroad has increased steadily over recent years, with 2004 seeing the highest number reported in England, Wales, and Northern Ireland since 1996.
- In 2004 and 2005, Europe was the most reported region of acquisition for Legionnaires' disease acquired abroad in England, Wales, and Northern Ireland.

International perspective

Legionnaires' disease is a bacterial disease that may cause pneumonia. It is transmitted via inhalation of water droplets or aerosols from a contaminated water source, usually cooling systems or showers. There is no person-to-person spread. Legionnaires' disease occurs sporadically throughout the world, although clusters and outbreaks occasionally occur if there is a breakdown in control and prevention methods. In Europe, there were 4,578 cases reported in 2003 from 34 countries and 4,558 cases reported in 2004 from 35 countries[1]. The overall incidence was 9.8 per million in 2003 and 8.2 per million in 2004. The European country with the highest incidence recorded in 2004 was Spain (23.8 per million population), followed by Croatia (21 per million), and Switzerland (20 per million). More information about Legionnaires' disease can be found on the HPA website[2].

Legionnaires' disease in England, Wales, and Northern Ireland

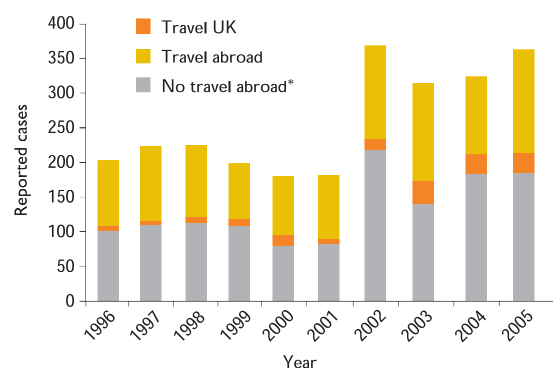
Sources of data

- **The national surveillance scheme for Legionnaires' disease in residents of England and Wales** managed by the HPA Centre for Infections. For more information about the data collected and case definitions, see the Legionnaires' disease page of the HPA website.
- **Reports of legionellosis, Northern Ireland. CDSC Northern Ireland**. Available at http://www.cdscni.org.uk /surveillance/Respiratory/Legionnaires%27_Disease.htm.

Results

Figure 1 shows the number of reported cases of Legionnaires' disease in England, Wales, and Northern Ireland between 1996 and 2005. Before 2002, there was an average of 205 cases reported each year, and between 2002 and 2005 there have been 350 cases reported on average. There was a clear rise (of 116%) in the number of cases reported in 2002 compared to 2001, and numbers remained at a similar level up to 2005.

FIGURE 1: Legionnaires' disease reported in England, Wales, and Northern Ireland: 1996 - 2005



*Includes community-acquired and nosocomial cases

TABLE 1: Cases of Legionnaires' disease associated with travel abroad, by age and sex, England and Wales: 2004 and 2005

Age group (years)	2005			2004		
	Female	Male	Total	Female	Male	Total
15-44	2	19	21	-	13	13
45-54	16	17	33	12	27	39
55-64	6	39	45	14	34	48
65-74	14	22	36	10	24	34
75+	3	11	14	4	11	15
Total	**41**	**108**	**149**	**40**	**109**	**149**

Between 1996 and 2005 an annual average of 45% of reported Legionnaires' disease cases were associated with travel abroad. In 2002, this proportion was slightly less (34%) probably because of the increased number of cases reported in England due to a large outbreak in Cumbria that occurred in July/August of that year[3]. (There was, however, a simultaneous increase in the reported number of cases acquired abroad from 92 in 2001 to 135 in 2002.)

In 2005, there were 152 cases of Legionnaires' disease associated with travel abroad, 149 in England and Wales, and three in Northern Ireland. Information about age and sex was only available for the England and Wales cases. The male to female ratio of travel-associated Legionnaires' disease was 2.7:1 in 2004 and 2.6:1 in 2005, and 64% of cases were in those aged 55 years and over (65% in 2004) [table 1]. Of all cases associated with travel abroad in 2005, there were 11 deaths reported; nine were males and two were females. All were aged 50 years and over. In 2004, there were 14 deaths (nine males, five females) of which 11 were in those over 50 years old.

TABLE 2: Reported cases of Legionnaires' disease associated with travel abroad by country of travel, England and Wales: 2004 and 2005

Country of travel	2005	2004
Spain	41	31
Greece	17	4
Italy	14	19
France	11	12
Turkey	6	10
United States	6	9
Bulgaria	4	3
Malaysia	4	-
Subtotal	**103**	**88**
Other countries	46 (N=25)	61 (N=24)
Total	**149**	**149**

Seventy percent (104/149) of cases associated with travel abroad, diagnosed in England and Wales in 2005, were acquired in Europe, mainly in countries that are popular with British holiday makers; a similar picture was also seen for 2004 (76% acquired in Europe) [table 2]. A country that was not included in the top eight countries in 2005 but was included in 2004 was Malta; there were 13 cases reported that stated travel to Malta in 2004 compared to only two in 2005.

Conclusion

Legionnaires' disease associated with travel abroad is linked to stays in holiday accommodation where intermittent use of facilities, variable temperatures, and seasonal fluctuations of water flow may increase the risk of infection. Older age groups are most at risk and males tend to be affected more than females. Prevention of Legionnaires' disease needs to be a collaborative effort between health professionals, governments and the tourist industry and great progress has been made since EWGLINET began in 1986 to co-ordinate such activities in Europe[4]. Travellers in the highest risk groups must seek medical attention as soon as possible if they suspect they might have Legionnaires' disease.

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Schistosomiasis

KEY POINTS

- Between 1996 and 2005, reports of schistosomiasis in England, Wales, and Northern Ireland have declined.
- The most important region of acquisition for schistosomiasis continues to be Sub-Saharan and Southern Africa.

International perspective

Schistosomiasis is a parasitic infection whose clinical effects depend on the species of parasite involved. Humans are infected with *Schistosoma* cercarial larvae found in freshwater contaminated by infected snails. Both intestinal (caused by *S. mansoni* and *S. japonicum*) and urinary (caused by *S. haematobium*) forms are endemic in 76 countries and territories in Africa, Asia, the Middle East, South America, and the Caribbean. An estimated 200 million people are infected worldwide, 85% of whom live in Africa[1]. The most severely affected countries in Africa are Angola, Central African Republic, Chad, Egypt, Ghana, Madagascar, Malawi, Mali, Mozambique, Nigeria, Senegal, Sudan, Uganda, the United Republic of Tanzania, Zambia, and Zimbabwe. Brazil, with 25 million people living in endemic areas and 3 million infected, is the most affected country in the Americas. China is the most affected country in Asia with an estimated 900,000 people infected. Yemen is the most affected country in the Middle East (up to 3 million infected)[2]. Man-made water developments projects have been known to affect populations of infected snails, which in turn, affect the prevalence of schistosomiasis. For example, schistosomiasis became a problem in Ghana after the Volta Dam at Akosombo was built in the 1960s[3].

Schistosomiasis in England, Wales, and Northern Ireland

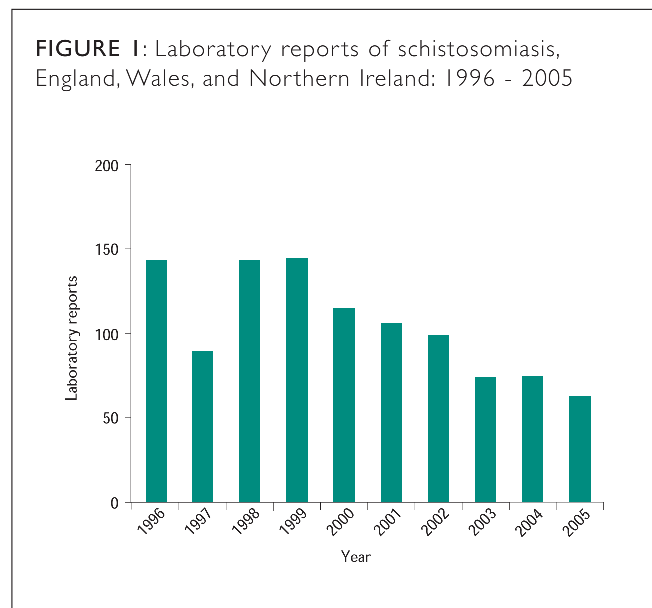
Source of data

- Laboratory reports for 2004 were extracted from Labbase 2, 25 January 2006 and reports for 2005 were extracted 11 October 2006.

Results

Figure 1 shows the total laboratory reports of schistosomiasis between 1996 and 2005. Reports of schistosomiasis have been decreasing in recent years, with 67 reports in 2005 compared to 73 in 2004 and 2003.

FIGURE 1: Laboratory reports of schistosomiasis, England, Wales, and Northern Ireland: 1996 - 2005



The predominant organism usually seen in cases in the UK has been *Schistosoma haematobium* (38 reports); *S. mansoni* has also been reported but to a lesser degree (11 reports) [figure 2].

FIGURE 2 : Laboratory reports of schistosomiasis by species identified, England, Wales, and Northern Ireland: 1996 – 2005

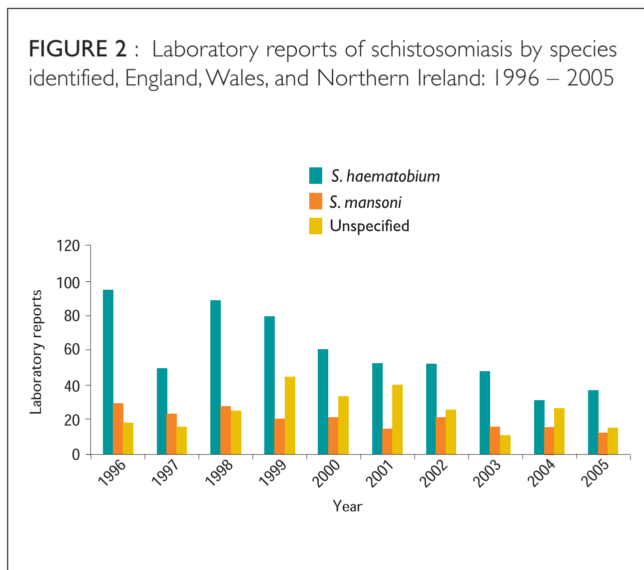
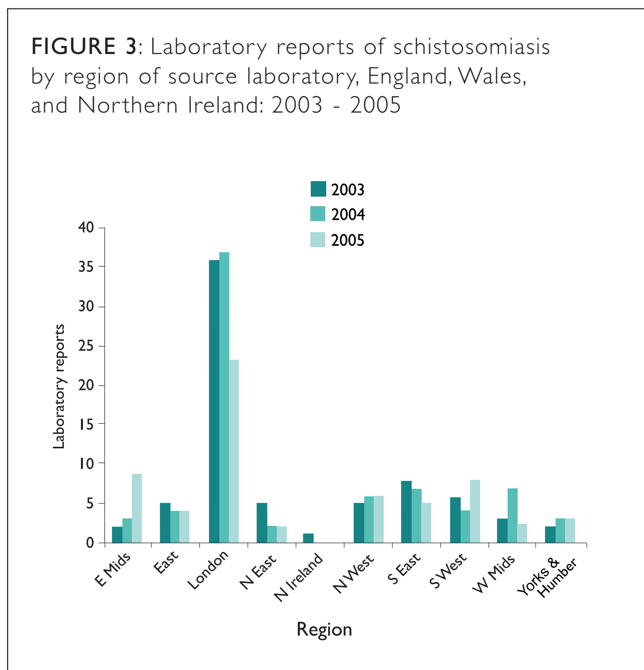


FIGURE 3: Laboratory reports of schistosomiasis by region of source laboratory, England, Wales, and Northern Ireland: 2003 - 2005



Of the reports in 2005, 67% (45 reports) were in males and 30% (20 reports) in females; the median age was 26 years.

In 2005, just over a third of cases (34%) were reported from the London region, 38% lower than in previous years when just over half of cases were reported from that region [figure 3]. East Midlands and the South West have seen a three-fold and two-fold increase respectively compared to 2004.

Although schistosomiasis does not occur in the UK, travel history for laboratory reports has been consistently under reported[4]. Around a third of reports have a country of travel stated [table 1]. Most cases, where country of travel was stated, had travelled to countries in Sub-Saharan and Southern Africa; in 2005, Malawi was the most reported country of travel (six reports), of which four were *S. haematobium* and the other two unspeciated. There was one unspeciated report that stated travel to India, which was the first case reported from the country since 1999.

TABLE 1: Laboratory reports of schistosomiasis by country of travel, England, Wales, and Northern Ireland: 2003 - 2005

Country	2003	2004	2005
Africa unspecified	-	1	2
Africa, Asia	-	1	-
Burundi	1	-	-
Congo	-	1	-
Côte D'Ivoire	1	-	-
Egypt	1	1	-
Eritrea, Sudan	-	1	-
Ethiopia	1	-	-
Ghana	2	-	3
India	-	-	1
Kenya	2	-	-
Lake Malawi	1	-	-
Lake Victoria	1	-	-
Madagascar	1	1	-
Malawi	2	4	6
Mali	-	-	1
Nigeria	-	-	3
Rwanda	1	-	1
Sierra Leone	1	-	1
Somalia	-	1	-
Sudan	-	1	1
Uganda	-	3	-
Zambia	-	2	-
Zimbabwe	9	2	1
Not stated	49	54	47
Total	**73**	**73**	**67**

Conclusion

Laboratory reports of schistosomiasis have declined since 1996 for reasons which are unclear. *S. haematobium* continues to be the most predominant species of schistosomiasis reported in England, Wales, and Northern Ireland; this may be due to travelling patterns of cases. More information about travel history and causative organism would help to determine this. More information about country visited and reason for travel would assist in identifying the type of traveller most at risk of infection. From the data above, the majority of reports were in young adult males. It may be that exposure to contaminated freshwater is higher in this group of travellers.

There is no vaccine for schistosomiasis at present, although candidates are being tested in clinical trials[5]. Furthermore, there is no specific chemoprophylaxis for prevention in travellers, although several studies have tried to assess whether topical application of N,N-diethyl-m-toluamide (DEET) may have some prophylactic effect[6-8]. The disease is, however, treatable with praziquantel. Travellers to countries where schistosomiasis is endemic should avoid activities that involve contact with freshwater. More information about schistosomiasis is available from the National Travel Health Network and Centre[9].

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Leptospirosis

KEY POINTS

- There was an overall increase during the period 1997 to 2005 in the number of patients with leptospirosis acquired during travel to both tropical and European countries compared to 1992 to 1996. This may be associated with the worldwide increase in travel, and adventure holidays in particular.
- Cases are acquired abroad each year especially in travellers to South East Asia and Australasia in whom the serovars encountered may differ from those found in the UK. These are most likely to occur in travellers who have participated in recreational watersports activities.

International perspective

Leptospirosis, a zoonotic bacterial disease, is caused by pathogenic serovars of the genus *Leptospira*. One presentation is of Weil's disease which includes symptoms of fever, jaundice and bleeding. The infection is transmitted to humans through exposure to the urine of infected animals, often in contaminated water. It occurs throughout the world, although it is more commonly found in tropical and sub-tropical regions. There are over 200 known pathogenic serovars worldwide, for which different animal species act as maintenance hosts. Only a small number of serovars are endemic in any particular region or country; those encountered most frequently in the United Kingdom (UK) are *Leptospira Hardjo* and *L. Icterohaemorrhagiae*.

Leptospirosis in England, Wales, and Northern Ireland

Sources of data

- Leptospirosis is a notifiable disease in humans throughout the United Kingdom, and is reportable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR 95) to the Health and Safety Executive (HSE) and is a prescribed industrial disease. The equivalent legislation in Northern Ireland is the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1997. For more information on RIDDOR see http://www.riddor.gov.uk, also http://www.hse.gov.uk/pubns/misc310.pdf.
- Cases of leptospirosis were confirmed by the *Leptospira* Reference Laboratory, Hereford, cross-checked with laboratory reports extracted from labbase2 and the Statutory Notification of Infectious Diseases (NOIDS) data[1].

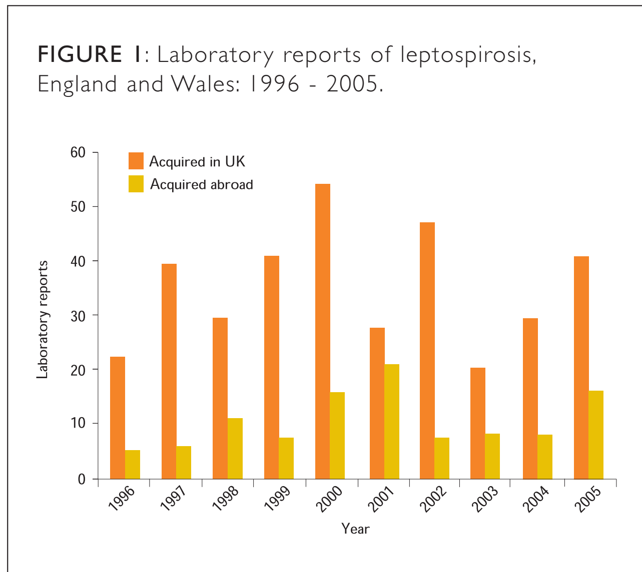
Results

In England and Wales there were 56 laboratory-confirmed reports of human leptospirosis in 2005, of which 41 were indigenously acquired. This is compared to 39 in 2004 (29 indigenous cases), and 28 in 2003 (20 indigenous cases). There was one report of leptospirosis reported in Northern Ireland in both 2004 and 2005; both were acquired within the UK. No deaths were reported in either 2004 or 2005 [table 1].

TABLE 1: Laboratory reports (UK-acquired only) and notifications of leptospirosis, England, Wales, and Northern Ireland: 1996 - 2005

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Laboratory reports	24	42	33	42	54	48	55 (1)	28	30	42
Notifications	16	24	34	24	32	25	25	24	14	32

FIGURE 1: Laboratory reports of leptospirosis, England and Wales: 1996 - 2005.



Travel-associated cases

In 2004, there were eight cases in England and Wales that acquired their infection abroad; there was no serovar information for these cases but countries of travel stated were Thailand (four), Brazil, Malaysia, and the Dominican Republic. In 2005, 15 people acquired leptospirosis while abroad, six had serovars identified; *L. Icterohaemorrhagiae*, *L. Cynopteri*, *L. Tarrasovi*, *L. Australis*, *L. Autumnalis*, and *L. Bataviae* (one each) and for nine, the serovar was not determined. Countries visited were Malaysia, Borneo, Thailand, China, the Philippines, Tanzania, Dominican Republic, Ecuador, and Belize. Activities undertaken included canoeing, windsurfing, rafting, cave diving, and backpacking. Three infections occurred in military personnel. There has been an overall increase during the period 1997 to 2005 in the number of patients with leptospirosis acquired during travel to both tropical and European countries compared with 1992 to 1996[2]. This may be associated with the worldwide increase in travel, and adventure holidays in particular.

Conclusion

Leptospirosis is primarily a disease of tropical and sub-tropical regions. It is uncommon in temperate climates and clusters of cases are unusual. It occurs sporadically in the UK; cases are acquired abroad each year especially in travellers returning from South East Asia, Central America, and Australasia in whom the serovars encountered may differ from those found in the UK. These are most likely to occur in travellers who have participated in recreational water sports activities. Environmental conditions are important for the survival of leptospires outside the host, the optimum being warm, moist conditions with a pH close to neutral. Travellers to regions of the world where leptospirosis occurs, particular those going on adventure trips involving water should be aware of the risk of infection. There is no vaccine to protect against infection but there is pre-exposure chemoprophylaxis available for those who may be at increased risk of exposure. More information about this is available from the National Travel Health Network and Centre[3] and the Centers for Disease Control and Prevention[4]. Further general information about leptospirosis is available on the Health Protection Agency website[5].

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Rabies

KEY POINT

- Travel-associated rabies is rarely seen in the UK, but cases have occasionally occurred. The disease (and death) occurs in people who have failed to receive appropriate pre- or post-exposure prophylaxis.

International perspective

Rabies is an acute viral infection that is nearly always fatal if no post-exposure prophylaxis is received. Transmission is usually through saliva via the bite, lick, or scratch of an infected animal, with dogs being the main transmitter of rabies to humans. Worldwide, the annual number of human deaths caused by endemic canine rabies is estimated to be 55,000 (90% CI: 24,500 - 90,800)[1]; around half of them are children. The burden is estimated to be highest in Africa and Asia, with 56% of deaths estimated to occur in Asia and 44% in Africa; the majority of those are estimated to occur in more rural areas. An estimated 10 million people worldwide receive post-exposure prophylaxis each year costing around US$ 560 million, of which Asia accounts for 96.5%.

The UK and most of Western Europe is certified as rabies-free due to the success of co-ordinated wildlife oral vaccination programmes, together with the availability of effective commercial vaccination for domestic animals[2]. European bat lyssavirus (EBLV) 1 and EBVL 2 have been documented in Daubentons' bats in Europe including the UK, but human cases are extremely rare[3]. In 2004, there was an incident in south western France involving an illegally imported dog from Morocco, which proved to be rabid[4]. The dog had bitten several people as well as other dogs and the region was temporarily declared rabies-infected. France has since been reinstated with its rabies-free status. Although most of Western Europe is free of classical rabies, rabies is still endemic in wild animals in the forests of North Eastern Europe as well as in North America and many parts of South America.

Rabies in England, Wales, and Northern Ireland

Sources of data

- Reports of deaths in the UK from rabies to the Health Protection Agency Centre for Infections.

Results

The last human death from classical rabies acquired in the UK, was over a century ago in 1902, but since then there have been at least 25 other deaths from classical rabies all acquired abroad. The majority of cases have been associated with travel to the Indian sub-continent (64%). All were infected after dog bites apart from one in 1976 where the animal vector was unknown. None of these cases (including the most recent case in 2004) had been given or sought post-exposure prophylaxis after the bite[5]. The case in 2004 was in a woman who had returned from a two-week holiday in Goa, India; she was diagnosed with paralytic rabies three and a half months after being bitten on the leg by a puppy while there on holiday[6].

Conclusion

The UK remains rabies free, and deaths from rabies acquired abroad are very rare. Cases occur in people who have failed to be given appropriate pre- and/or post-exposure prophylaxis, usually in travellers returning from rabies-endemic areas. It is important for travellers to be aware of the need to check risk information before travelling, to avoid contact with animals in countries where there is a high incidence, and to seek medical attention as soon as possible after any exposures. The type of post-exposure prophylaxis given is dependent on whether the patient has received pre-exposure vaccine or not, the risk of rabies in the country concerned and the nature of the exposure. The UK has had no recorded cases of deaths in people exposed to the virus who have received timely and appropriate post-exposure prophylaxis. In 2000, there were 295 people in England and Wales, who received post-exposure prophylaxis after a history of exposure to an animal, while abroad[7]. Recommendations for pre- and post-exposure prophylaxis are given in the Department of Health's 'Green Book'[8] and further information on risk to foreign travellers is available from the National Travel Health Network and Centre[9].

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