

# Overseas briefs

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## *Poliomyelitis — Nigeria*

Source: Yahoo news, 29 June 2004 [edited]

Nigeria's fast-growing polio outbreak now accounts for more than three-quarters of the world's fresh cases of the crippling disease and threatens children across West Africa.

The World Health Organization (WHO) said that, by 23 June 2004, it had confirmed 257 new victims of polio in Nigeria and that represents 77 per cent of known cases worldwide. In March 2004, Nigeria saw the highest ever-recorded monthly incidence of wild poliovirus, with 85 confirmed cases across the country.

As of April 2004, only six of the 36 states in Africa's most populous country were polio-free. Intense transmission of the polio disease in Nigeria continues despite the low transmission season. High transmission season of polio occurs during the rainy season when children have contact with contaminated water and food. Nigeria's rains begin in March and build up in August and September.

In March 2004, Kano's state government refused to take part in a United Nations-led campaign to vaccinate West African children against polio, following a campaign by Islamic clerics against the vaccine in use. Some local preachers alleged that the vaccine had been laced with fertility hormones by western agents as part of a United States of America led bid to sterilise African girls. International health experts dismissed the claims. Kano suspended vaccination, saying that it preferred to import 'safe' vaccines produced in an Islamic country. On 27 May 2004, Kano said that it was testing polio vaccines made in Indonesia, and was waiting for the results.

As of week of 22 June 2004, 333 cases of polio were reported worldwide, with 257 cases in Nigeria (77.2% of the global reports), 18 cases in Niger (5.4%), 15 cases in Pakistan (4.5%), 13 cases in India (3.9%), three cases in Afghanistan (1%), and one case in Egypt (0.3%). These six countries are those countries where polio is considered to be endemic (wild

poliovirus transmission has not been interrupted) and account for 307 of the 333 reported cases in 2004 (92.2% of the reported cases globally). Of the remaining 26 reported cases, all are from countries in Africa and are related to the ongoing outbreak in Nigeria (Central African Republic 1 case, Burkina Faso 4, Benin 4, Cote d'Ivoire 8, Chad 7, Botswana 1, Sudan 1). Data are available from: <http://www.polioeradication.org/content/fix/casecount.shtml>

## *Wild poliovirus importations — West and Central Africa, January 2003 to March 2004*

Source: MMWR Morb Mortal Wkly Rep 28 May 2004;53:433–435 [edited]

Since the 1988 World Health Assembly resolution to eradicate poliomyelitis,<sup>1</sup> three World Health Organization (WHO) regions (Americas, European, and Western Pacific) have been certified polio-free. The number of countries with endemic polio has decreased from 125 in 1988 to six in 2003 (Afghanistan, Egypt, India, Niger, Nigeria, and Pakistan).

Between January 2003 and March 2004, importations of wild poliovirus (WPV) occurred in eight countries that were previously polio-free: five in West Africa (Benin, Burkina Faso, Cote d'Ivoire, Ghana, and Togo) and three in Central Africa (Cameroon, Central African Republic, and Chad), resulting in 63 polio cases.<sup>2,3</sup>

During 1999–2000, West and Central African countries began intensifying and synchronising National Immunisation Days, leading to a decrease in the number of countries with endemic WPV from 13 in 1999 to one in 2001.<sup>4</sup> During January 2003–March 2004, eight previously polio-free countries reported WPV importations from endemic poliovirus reservoirs shared by northern Nigeria and southern Niger, which were largely a result of suspension of immunisation campaigns in certain northern states of Nigeria in August 2003.<sup>3</sup> Many of these countries had continued transmission after importation because of low routine vaccination coverage, increased intervals between supplementary immunisation activities (SIAs), and possibly declining quality of SIAs. The importations and spread highlight the increased vulnerability of countries with low routine vaccination coverage that are no longer conducting SIAs.

Ongoing transmission in Nigeria and Niger has set back the goal to interrupt poliovirus transmission in Africa by the end of 2004.<sup>3</sup> To restore gains made in polio eradication in West and Central Africa, WPV transmission must be interrupted in Nigeria and Niger. Until that time, neighbouring countries must create a population immunity barrier by implementing high routine vaccination coverage and high-quality SIAs. In 2002, these steps proved successful in preventing importation of WPV into Bangladesh and Nepal during a resurgence of polio in India. Surveillance standards also must be maintained to ensure rapid detection of any WPV importation, allowing for timely response and containment.

## References

1. World Health Assembly. Global eradication of poliomyelitis by the year 2000: resolution of the 41st World Health Assembly. Geneva, Switzerland: World Health Organization, 1988 (WHA resolution no. 41.28).
2. Okwo-Bele JM, Lobanov A, Biellik RJ, *et al.* Overview of poliomyelitis in the Africa Region and current regional plan of action. *J Infect Dis* 1997;175(Suppl 1):S10–S15.
3. Centers for Disease Control and Prevention. Progress toward global poliomyelitis eradication—Nigeria, January 2003–March 2004. *MMWR Morb Mortal Wkly Report* 2004;53:343–346.

## *Nipah virus — Bangladesh, 2004*

*Source: Centers for Disease Control and Prevention, National Center for Infectious Diseases, Travelers' Health 26 May 2004 [edited]*

The outbreak of Nipah virus encephalitis that began in mid-March 2004 has ended. The outbreak, which occurred in the Faridpur District of Bangladesh, was responsible for 34 cases, including 26 deaths. No new cases have been reported since mid-April 2004. The Centers for Disease Control and Prevention (CDC) in the United States of America confirmed Nipah virus infection in 16 of the cases. Health authorities in Bangladesh, the International Center for Diarrheal Disease Research in Bangladesh, CDC, and other international partners worked together to assess and control this outbreak. Outbreaks of Nipah virus encephalitis have previously occurred in Bangladesh in May 2001, January/February 2003, and January/February 2004.

Nipah virus, which was discovered in 1999, is a zoonotic virus (infectious disease that can be transmitted from certain animals to humans). Fruit bats of the genus *Pteropus* are thought to be the reservoir for this virus. The initial outbreak in Malaysia and Singapore affected humans and commercial swine-

herds, although other species, including cats, dogs, and horses, were also infected. The virus mainly caused respiratory illness among the pigs and an encephalitis syndrome among humans. Nipah virus infection can cause fever, muscle pains (myalgia), drowsiness, and encephalitis characterised by serious central nervous system illness, coma, seizures, and inability to maintain breathing.

As a general precaution, CDC advises travellers to avoid contact with wild or domestic animals in the region. As with other infectious illnesses, one of the most important and appropriate preventive practices is careful and frequent hand washing, which helps remove potentially infectious materials from the skin and prevents disease transmission.

## *Hepatitis A — Europe*

*Source: Euro Surveill Wkly, 2004;8. May 2004 [edited]*

### Denmark

A review of notifications to the Department of Epidemiology in the Statens Serum Institut (<http://www.ssi.dk/sw379.asp>) has revealed a cluster of cases of hepatitis A virus infection acquired in Denmark among men aged 18 years or older.<sup>1</sup> Twenty-eight cases in men have been notified so far in 2004. Of the 20 patients from the greater Copenhagen area, at least 16 are men who have sex with men (MSM). At least five Swedish men have also been infected with hepatitis A virus in Copenhagen. In the past five years, the median number of notified cases of hepatitis A acquired in Denmark each year among men aged 18 years or over was eight (range 6–11). Because of missing or delayed notifications, a full overview of the current outbreak has not yet been achieved. An increased incidence of syphilis has also been observed among MSM in Copenhagen,<sup>2</sup> but a possible association between these two outbreaks has not yet been established.

Outbreaks of hepatitis A among MSM have previously been reported both in Copenhagen and abroad, acquired in places such as saunas.<sup>3,4</sup> The most recently described outbreak in Denmark was in 1991. Studies have established risk factors for infection with hepatitis A among MSM. Examples of these risk factors are recent anonymous sexual partners, oral-anal sex or digital-anal sex, as well as visiting certain bars or saunas. Social contact of a non-sexual nature and secondarily contaminated foodstuffs may also contribute to infection. In the current outbreak, no particular risk factors have so far been found. Danish HIV/AIDS organisations are currently launching a nationwide information campaign about sexually transmitted infections, which includes hepatitis A virus infection.

## References

1. Molbak K. Hepatitis A outbreak among MSM. *EPI-NEWS* 2004;18. Available from: <http://www.ssi.dk/sw11450.asp>
2. Axelsen N, Mazick A, Andersen P. Syphilis 2003. *EPI-NEWS* 2004;15/16. Available from: <http://www.ssi.dk/sw10793.asp>
3. Hoybye G, Skinhoj P, Hentzer B, Faber V, Mathiesen L and the Copenhagen Hepatitis Acuta Programme (CHAP). An epidemic of acute viral hepatitis in male homosexuals. *Scand J Infect Dis* 1980;12:241–244.
4. Delarocque-Astagneau E. Epidemic of hepatitis A among homosexual men in Paris, 2000. *Eurosurveillance Wkly* 2001; 5(46): 15/11/2001. Available from: <http://www.eurosurveillance.org/ew/2001/011115.asp#4>

## The Netherlands

A recent unusual increase in the number of notifications of hepatitis A virus infection has been detected through the Dutch data collection system for notifiable diseases.

Men who have sex with men (MSM) appear to be particularly affected. In 2004, there have so far been 99 notifications of hepatitis A virus infection acquired by men aged 18 years or older, compared with 37 during the same period in 2003. Among the notifications in 2004, 31 reported homosexual sex as a risk factor for hepatitis A. Information about patients' sexual behaviour is not yet a standard requirement of notification of hepatitis A across the country, and therefore hepatitis A cases acquired by this route of infection could be underestimated at present. In 2003, there was just one notification with sex between men as a risk factor over the same period of time. However, the current outbreak is not unusual; a similar increase in hepatitis A infections in MSM was seen in 2001. The recent outbreak of lymphogranuloma venereum in MSM<sup>1</sup> has increased awareness of sexually transmitted infections in the MSM community.

## Reference

1. Gotz H, Nieuwenhuis R, Ossewaarde T, Bing Thio H, van der Meijden W, Dees J, *et al.* Preliminary report of an outbreak of lymphogranuloma venereum in homosexual men in the Netherlands, with implications for other countries in western Europe. *Eurosurveillance Wkly* 2004;8. Available from: <http://www.eurosurveillance.org/ew/2004/040122.asp#1>

## Food and waterborne disease — Asia, Pacific rim

Source: *News Medical.net* [edited] 25 May 2004

Foodborne diseases pose a serious threat to densely populated areas of Asia and the Pacific, two United Nations agencies said today. 'So far, food contamination incidents and foodborne disease outbreaks in the region have been relatively isolated, but the potential danger is just round the corner. Already an estimated one in three people worldwide suffer annually from a foodborne disease, and 1.8 million die from severe food and waterborne diarrhoea.'

'The danger of food-related outbreaks is particularly acute in Asia and the Pacific, because of the instances in which animals and people live in proximity and the way in which some food is produced and distributed,' says Dr Kerstin Leitner, World Health Organization (WHO) Assistant Director-General responsible for Food Safety. The avian influenza epidemic, as the most recent example of a disease linking food, animals and human health, has been historically unprecedented and of great concern for human health as well as for agriculture, with 23 fatal human cases and about 100 million birds died or culled. However, in the region, more than 700,000 people die and many more are debilitated every year from single cases of food and waterborne disease—single cases that most often do not hit press headlines.

On the trade side, disruptions due to shortcomings in food quality have also been on the increase. 'Since 2001, unacceptable pesticide residue levels in fruits and vegetables, chloramphenicol and other antibiotic residues in seafood and poultry, pathogens in seafood and mycotoxins in crops and peanuts have been the cause of rejection of food export from the Asian region,' according to Hartwig de Haen, Food and Agriculture Organization (FAO) Assistant Director-General, Economic and Social Department. A ban on fish imports into the European Community (EU) cost one Asian country \$335 million of lost export opportunities.

The Food Safety Regional Conference is the response to the urgent need for countries in the region to work together to develop harmonised and coordinated food safety systems, resulting in uniform emergency responses to such threats, the UN agencies say.

The Conference is part of a series of regional meetings that FAO and WHO are jointly organising to meet the needs of member countries for policy guidance and capacity-building in food safety. A practical action plan is expected to emerge from this meeting to help the region overcome the difficulties

and problems it faces in improving food safety, including surveillance and response systems. Particular attention is devoted to covering the full food production chain, with a special focus on the segments that are best suited for interventions to significantly lower the foodborne disease risk.

### *Severe Acute Respiratory Syndrome — China, 2004*

Source: World Health Organization, CSR 18 May 2004 [edited]

China's latest Severe Acute Respiratory Syndrome (SARS) outbreak has been contained, but concerns remain. It has been more than three weeks since the last case was placed in isolation in China's latest SARS outbreak, prompting the World Health Organization (WHO) to declare that the chain of human-to-human transmission appears to have been broken. However, WHO experts and the Chinese authorities are still trying to determine the exact cause of the outbreak. The investigation has centred primarily on the National Institute of Virology in Beijing, where experiments using live and inactivated SARS coronavirus have been carried out. Two researchers at the institute developed SARS in late March and mid-April 2004. The outbreak was reported on 22 April 2004 and the institute was closed a day later.

Preliminary findings in the investigation have yet to identify a single infectious source or single procedural error at the institute—and it is conceivable that an exact answer may never be determined. Neither of the researchers is known to have directly conducted experiments using live SARS coronavirus, but investigators have serious concerns about safety procedures at the institute—including how and where procedures using SARS coronavirus were carried out, and how and where SARS coronavirus samples were stored.

WHO and Chinese authorities view with concern the occurrence of laboratory-associated SARS cases. WHO urges all member states to view this latest outbreak as an opportunity to review the safety practices of institutions and laboratories working with SARS coronavirus.

During and after the SARS outbreak of 2003, a large number of specimens were collected from possible human cases, animals and the environment. These specimens, which may contain live SARS coronavirus, are still kept in various laboratories around the world. Some of them are stored in laboratories at an inappropriate containment level. SARS coronavirus has also been propagated in reference and research laboratories, and distributed to other laboratories for research purposes. Research using

live and inactivated SARS coronavirus—and other pathogens capable of causing serious illness—is being conducted in many laboratories.

WHO has issued laboratory safety guidelines and recommendations.

### *Creutzfeldt-Jakob disease (new variant) carrier frequency study — United Kingdom*

Source: BBC News online, 21 May 2004 [edited]

Researchers at Plymouth's Derriford Hospital and the Creutzfeldt-Jakob Disease Surveillance Unit have tested 12,674 appendix and tonsil samples. Three samples showed signs of variant Creutzfeldt-Jakob disease (vCJD). Extrapolating their findings to the whole population, they estimated that 3,800 Britons might harbour the disease.

A total of 141 people have died from vCJD in the United Kingdom since the disease emerged in 1995. Scientists have been suggesting that the number of deaths from the disease had peaked. A recent study by researchers at the Imperial College London predicted the disease would claim fewer than 540 lives.

The scientists who carried out this latest study said their findings need to be interpreted with caution. There is still much to learn about vCJD and presence of the protein in these tissue samples does not necessarily mean that those affected will go on to develop vCJD.

Meanwhile, the Health Protection Agency is in the process of collecting 100,000 tonsil samples which will be tested for signs of vCJD. A long-awaited trial to test potential treatments for vCJD could start within weeks. It will examine whether an anti-psychotic called quinacrine or an unlicensed drug called pentosan polysulphate can help people with the disease.

### *World Organisation for Animal Health (OIE): New animal disease notification system*

Source: OIE internet site, Editorial. Accessed 15 May 2004 [edited]

Resolutions passed by the International Committee and recommendations issued by the Regional Commissions have instructed the World Organisation for Animal Health (OIE) Central Bureau to establish a single OIE list of notifiable terrestrial animal diseases to replace the current Lists A and B. The

aim in drawing up a single list is to be in line with the terminology of the Sanitary and Phytosanitary Agreement of the World Trade Organization, by classifying diseases as specific hazards and giving all listed diseases the same degree of importance in international trade.

An Ad Hoc Group on Terrestrial Animal Disease/Pathogenic Agent Notification, comprised of internationally renowned experts, was convened to support the OIE Animal Health Information Department in defining criteria to determine whether a given disease should be included in the OIE list.

The proposed criteria for a disease to be included in the OIE single list were kept to a minimum and consist of easily definable factors applicable worldwide. The overriding criterion for a disease to be listed is its potential for international spread. Other criteria include a capacity for significant spread within naive populations and the zoonotic potential. Each criterion is linked to measurable parameters: if a disease fulfils at least one of these parameters, then it becomes notifiable.

Under the future OIE notification system, not only the disease but other related events will require urgent notification. The events of epidemiological significance that should be notified immediately are as follows:

- the first occurrence of a listed disease or infection in a country or compartment ('Compartment': autonomous epidemiological entity defined on the basis of either geography (zone) or management (enterprise) for the purpose of international trade);
- the re-occurrence of a listed disease or infection in a country or compartment following a report by the Delegate of the Member Country declaring the outbreak closed;
- the first occurrence of a new strain of a pathogen of a listed disease in a country or compartment;
- a sudden and unexpected increase in morbidity or mortality caused by an existing listed disease;
- emerging diseases with significant morbidity/mortality or zoonotic potential; or
- evidence of a change in the epidemiology of a listed disease (including host range, pathogenicity, strain of causative pathogen), in particular if there is a zoonotic impact.

## *Rabies: human organ transplantation* — USA

Source: WWMR Morb Mortal Wkly Rep, *Dispatch Vol 53 9 July 2004 [edited]*

On 1 July 2004, the Centers for Disease Control and Prevention (CDC) reported laboratory confirmation of rabies as the cause of encephalitis in an organ donor and three organ recipients at Baylor University Medical Center (BUMC) in Dallas, Texas.<sup>1</sup> Hospital and public health officials in Alabama, Arkansas, Oklahoma, and Texas initiated public health investigations to identify donor and recipient contacts, assess exposure risks, and provide rabies post-exposure prophylaxis (PEP). As of 9 July 2004, PEP had been initiated in approximately 174 (19%) of 916 persons who had been assessed for exposures to the organ recipients or the donor.

As a result of its public health investigation, the Arkansas Department of Health determined that the donor had reported being bitten by a bat.

On 7 July 2004, the CDC was notified of an additional organ transplant patient at BUMC who had died of encephalopathy of unknown origin in early June 2004. This case was detected as part of an ongoing review of transplant-patient autopsies. The patient, who had end-stage liver disease, had received a liver transplant at BUMC in early May 2004. The patient remained hospitalised, with transplant-related complications, and began having neurologic abnormalities in early June 2004, progressing to seizure, coma, and death. On 7 July 2004, pathologists at BUMC identified intracytoplasmic inclusions, suggestive of rabies, in neurons in multiple areas of the brain.

Specimens from the recipient were sent to the CDC on 7 July 2004, and direct fluorescent antibody and immunohistochemical staining procedures confirmed the presence of rabies viral antigens in multiple areas of the brain, including the hippocampus, midbrain, pons, medulla, and cerebellum. Similar to the findings with the three previously known rabies-infected transplant recipients, preliminary antigenic characterisation of the agent was consistent with a rabies virus variant associated with insectivorous bats. On 8 July 2004, CDC laboratory testing of tissues and serum from the donor who provided the liver yielded no evidence of infection with rabies virus.

Review of surgical procedures at BUMC determined that a segment of iliac artery, recovered from the donor subsequently determined to have rabies, had been stored at the facility for future use in liver transplants. This artery segment subsequently was used in the transplantation of the liver in the most recently

identified rabies-infected recipient. Investigation of rabies transmission sources is ongoing, although current evidence suggests that the artery segment originating from the rabies-infected donor likely is the source of the latest rabies infection. Identification of contacts of this liver recipient is under way, and initiation of PEP when indicated, or, as appropriate, is in progress.

## Reference

1. Centers for Disease Control and Prevention. Investigation of rabies infections in organ donor and transplant recipients—Alabama, Arkansas, Oklahoma, and Texas, 2004. *MMWR Morb Mortal Wkly Rep* 2004;53:586–589.

## *Avian influenza: genesis of H5N1 epidemic*

Source: World Health Organization, *CSR, Disease Outbreaks News*, 8 July 2004 [edited]

In the last two weeks, avian influenza appears to have re-emerged in poultry in several countries in Asia. These outbreaks could either be new outbreaks of highly pathogenic avian influenza A(H5N1) virus, or, a continuation of the outbreaks first reported earlier in 2004. These events, in addition to two new research reports—about the virus becoming increasingly pathogenic and becoming more widespread in birds in the region—fuel WHO's concern about the threat the virus poses to human health.

WHO has been concerned about the influenza A(H5N1) virus, because of its threat to humans, both in farm settings in Asia, and its greater, potentially global risk. Several countries in Asia have witnessed this virus crossing the species barrier—moving from infected chickens or ducks directly into humans—in three documented outbreaks since 1997. These direct human infections have produced severe, and sometimes fatal, outcomes. Moreover, the virus has the potential to acquire the ability to spread easily from human to human, thus triggering a global influenza pandemic.

Two research reports have now been added to our understanding of this virus. Firstly, members of China's Ministry of Agriculture, and colleagues reported in a paper published in July 2004 in the Proceedings of the National Academy of Sciences, that the virus appears to be widespread in domestic ducks in southern China. Further, the scientists found that the virus is causing increasingly severe disease. However, these trials were done in mice and may not have a direct implication for humans.

In July 2004, the journal *Nature* published a report which indicates domestic and wild birds in the region may have contributed to the increasing spread of the virus, and suggests that the virus is gaining a stronger foothold in the region. These observations suggest that control of the virus may be even more difficult than thought in the spring of 2004.

Effective risk management tools exist to control outbreaks of influenza A(H5N1) virus infection, when they are detected in poultry operations. China, for example, was quick to employ these tools during July 2004, when an outbreak was discovered in Anhui province. These risk-management measures include the culling of infected and exposed birds, stringent biosecurity measures, and vaccination. While this approach can still take months or even years to contain the virus completely, these methods have been effective in the past.

However, tools to assess the risk to human health are less well developed. While recent reports indicate the virus has been present consistently in the environment for the last several years, it has still not acquired the ability to infect humans easily. Why? Is there something about this virus which resists this development? Given the recent reports, WHO urges and offers assistance, that such risk-assessment activities—including surveillance in animals and humans, and strain analysis—be undertaken as soon as possible.

More knowledge of the virus could be acquired if WHO had full access to all virus isolates and clinical specimens from recent outbreaks. All H5N1 viruses are not the same and how they differ could provide important insights. For example, the work reported in *Nature* suggests that the Indonesian avian influenza virus, while belonging to the genotype of viruses seen in Viet Nam and Thailand, is also distinct. What, if any, impact does this difference have? With this information, public health planners would know that they are confronting the same virus in all of the recent outbreaks in Asia. This is another set of the many questions that need to be answered imperatively.

Pandemic preparedness activities started by WHO in the wake of the outbreaks reported earlier in 2004 continue. At the end of June 2004, WHO hosted a meeting in Kuala Lumpur with experts from 13 countries and areas of the Asia-Pacific region. Among other activities, the meeting participants were provided with a WHO preparedness self-assessment tool. WHO is collaborating with scientists and the pharmaceutical community on a global surveillance system to monitor changes in the virus' susceptibility to known antivirals. Finally, pandemic vaccine development continues. Two vaccine manufactur-

ers, both based in the United States of America, have produced a supply of trial vaccine which will be tested for safety and efficacy in humans.

In summary, recent developments suggest that:

- the virus is more widespread than previously thought and found in wild birds, and therefore, it may be more difficult to eliminate;
- virus isolates and specimens from all recent outbreaks need to be shared with the WHO laboratory network to monitor the circulating viruses and to assess the adequacy of the current pandemic vaccine strain;
- as control measures are strengthened, national governments are encouraged to provide human influenza vaccinations to culling workers;
- all people, especially culling workers, exposed to infected birds need to be provided with antivirals;
- human trials of experimental influenza pandemic vaccines should be accelerated; and
- while early identification of avian influenza cases in humans is difficult, stepped up surveillance for the early detection of the disease in humans is essential.

### *Bovine spongiform encephalopathy (BSE) update 2004*

*Source: BSE in Europe, updated 14 May 2004 [edited]. Available from: <http://home.hetnet.nl/~mad.cow/>*

These are not official data. The data from some countries may include exceptional imported cases or exclude exported cases which were found positive in the countries of destination. During 2003, decreased incidence of recorded Bovine spongiform encephalopathy cases, compared to 2002, was seen in most countries. The exceptions were Portugal, Spain, Japan, Poland, and the Czech Republic.

For additional information, the reader is referred to the source and to the Office International des Epizooties (OIE) table. Available from: [http://www.oie.int/eng/info/en\\_esbmonde.htm](http://www.oie.int/eng/info/en_esbmonde.htm)

## Bovine spongiform encephalopathy update 2004

Country	2001	2002	2003	2004	Total since 1987
United Kingdom	1,175	1,104	611	76	182,547
Austria	1	0	0	0	1
Belgium	46	38	15	7	124
Canada	0	0	1	0	1
Czech Republic	2	2	4	2	10
Denmark	6	3	2	0	13
Finland	1	0	0	0	1
France	274	239	137	27	919
Germany	125	106	54	21	319
Greece	1	0	0	0	1
Ireland	246	333	182	59	1,417
Israel	0	1	0	0	1
Italy*	50	36	31	1	120
Japan	3	2	4	2(1)	11
Liechtenstein	0	0	0	0	2
Luxembourg	0	1	0	0	2
Netherlands	20	24	19	5	76
Portugal	110	86	133	17	879
Poland*	0	4	5	5	14
Slovakia*	5	6	2	2	15
Slovenia	1	1	1	1	4
Spain	82	127	167	33	428
Switzerland	42	24	21	0	453
United States	0	0	1*	0	1

\* An imported case (from Canada).

Source: BSE in Europe, updated 14 May 2004. Available from: <http://home.hetnet.nl/~mad.cow/>