Discussion

The outbreak investigation implicated imported raw beef as the source of the outbreak. The beef was processed into minced meat in Norway, and subsequently distributed for sale via a national supermarket chain. The outbreak probably occurred over several weeks and since only a limited number of people were affected, it is possible that cooking the meat may have inactivated the bacteria, thereby preventing more cases. The product was recalled from the market according to zero tolerance policy for salmonella based on the National Food Law. Each year, approximately 1500–2000 cases of salmonellosis are reported in Norway, of which approximately 75-80% acquired infection abroad [3]. The National Salmonella Control Programme documented that cattle, swine, and poultry in Norway as well as domestically produced food products of animal origin are virtually free from salmonella [2]. Therefore, similarly to Finland and Sweden, Norway has negotiated the agreement requiring documentation of salmonella testing of meat and egg imports from EU countries [3]. The meat implicated in this outbreak was also accompanied by such documentation.

The application of MLVA typing method has been critical in both detecting this outbreak and determining the source. The MLVA method has been used as a routine typing tool for *S.* Typhimurium isolates received by Reference Laboratory of the Norwegian Institute of Public Health since 2004 [4]. This laboratory routinely receives all salmonella isolates from human, animal, food and feed samples for further typing. In comparison with PFGE gels, the MLVA fingerprinting method is fast and easy-to-use providing high-resolution discrimination between *S.* Typhimurium DT104 isolates, which are often genetically similar. Since *S.* Typhimurium DT104 is commonly isolated, it may be difficult to detect differences in strains with the use of another typing technique. Therefore, the MLVA method may be a valuable tool in determining the source of the outbreak. Moreover, the easy strain identification makes it possible to rapidly share results between countries in case of outbreaks. The detection of this outbreak through application of molecular methods highlights the importance of genetic characterisation of human and food isolates in order to identify possible clusters. The presence of an established system for tracing of food products facilitated a rapid recall of the implicated meat.

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Malaria cases and deaths in UK travellers returning from The Gambia

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Six cases of falciparum malaria have occurred in United Kingdom (UK) travellers who have recently returned from The Gambia [1]. Two patients are known to have died, and a further two are seriously ill. The patients, aged between 31 and 61 years, all returned to the UK and became ill in the second half of November 2005. Five had been on holidays lasting between one and two weeks, all in resorts within 20km of the Atlantic coast, with some patients having been on fishing or bird-watching excursions. The sixth patient had visited The Gambia several times on business and had travelled a little further inland than the other patients. All of the patients had taken either no or inadequate chemoprophylaxis.

The Gambia is a popular 'winter sun' destination for UK travellers, who account for nearly half of all tourist visits to the country [2] (around 30 000 UK tourists visited The Gambia in 2004 [3]). Malaria is highly endemic in The Gambia, with year-round transmission and over 100 000 cases reported annually in local residents [4].

Plasmodium falciparum is the most common type of malaria in The Gambia, and accounts for over 90% of cases in travellers returning to the UK from The Gambia. Falciparum malaria is the most severe form of the disease, and can rapidly progress to serious illness and death. Nearly 4% of falciparum malaria cases in travellers returning from The Gambia (2000-2004) were fatal.

Over the past six years, the annual number of cases in travellers returning to the UK from The Gambia has decreased, but the case fatality rate has increased (Table). Most cases of *P. falciparum* malaria were in travellers who did not take chemoprophylaxis.

FIGURE

Total numbers of *Plasmodium falciparum* malaria cases in travellers returning to the UK from The Gambia, reported to the UK Malaria Reference Laboratory, compared with reported cases acquired in all countries worldwide, 2000-2005 [5]

Year		Cases returning from The Gambia			
	Cases from all countries	Number of cases (% of all cases)	Number of Deaths	Case fatality rate	Percentage known to have taken prophylaxis*
2000	1576	121 (7.7)	4	3.3%	38.0%
2001	1576	74 (4.7)	1	1.4%	25.7%
2002	1469	46 (3.1)	2	4.3%	32.6%
2003	1339	48 (3.6)	3	6.3%	6.3%
2004	1221	31 (2.5)	2	6.5%	19.4%
2005**	855	8 (0.9)	1	12.5 %	30.0%

* The denominator is all falciparum case reports from The Gambia, including those where propylaxis status was unknown

** To end of August 2005. Please note that the main holiday season to The Gambia from the UK is during the UK winter months

Travellers to the Gambia and other malarious countries should seek medical advice on appropriate measures before travelling. The risk of malaria can be reduced by taking appropriate chemoprophylaxis, and by bite avoidance through suitable clothing, insect repellents and bed nets [6].

There is significant chloroquine resistance in The Gambia, so chloroquine (which can be obtained without prescription in the UK) is not recommended as chemoprophylaxis [7]. According to UK guidelines, travellers should instead use atovaquone/proguanil (Malarone), or doxycycline or mefloquine (Lariam). These regimes are only available on prescription, and doxycycline or mefloquine should be started at least one week before travelling. Full details are available in the 2003 UK guidelines [8], and the UK National Travel Health Network and Centre (http://www.nathnac.org) can provide up-to-date advice to clinicians on travellers with complex medical needs or travel itineraries.

Organising preventive measures, medical advice and prescriptions may be difficult when holidays are booked at short notice, and a cluster of cases were reported in the UK in December 2003 associated with trips to The Gambia that had been booked shortly before departure [9]. 'Late booking' holidays are increasingly available through internet-based travel companies.

The Federation of Tour Operators and Association of British Travel Agents have been informed about these cases. They are taking steps to alert their members about this issue, and the need to remind travellers to malarious areas to seek medical advice prior to departure.

This series of cases in people returning from The Gambia is associated predominantly with tourism. However, most malaria cases in the UK occur in former residents of malaria-endemic countries, mainly West Africa, who return home to visit friends or family [10]. Most have not taken appropriate chemoprophylaxis. All travellers to such areas, irrespective of where they were born, should take medical advice and appropriate preventive measures to reduce their risk of malaria.

Travellers who fall ill following a visit to a malarious area should seek prompt medical attention, and be aware that malaria can present up to a year or more after return [10]. Healthcare professionals should always take a travel history from anyone with a fever or flu-like illness, and be aware that absence of fever does not exclude the diagnosis of malaria. If the travel history includes travel to a malarious area in the previous year, blood films should be examined without delay.

This article is adapted by the authors from reference 1.

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SHORT REPORTS

FIRST ISOLATION OF *CLOSTRIDIUM DIFFICILE* PCR RIBOTYPE 027, TOXINOTYPE III IN BELGIUM

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Outbreaks of diarrhoea due to *Clostridium difficile* ribotype 027, toxinotype III have been reported in North America, United Kingdom, and the Netherlands [1-4], and this toxinotype has also been isolated from patients in Belgium. Recently, it has been suggested that the severity of the disease is associated with hyperproduction of toxins A and B by this new variant strain [5].

By 19 September 2005, four patients in the Jan Yperman hospital in Leper, southwest Belgium, had been infected. There was one death due to complications of *C. difficile*-associated diarrhoea and an underlying condition. All patients were female, aged over 70 and had spent longer than 2 weeks in hospital. Two patients were treated with quinolones, a third patient with a betalactam antibiotic and the fourth patient, who had a milder form, received no antibiotics at all. In the Jan Yperman hospital, the incidence of *C. difficile*-associated diarrhoea increased from 10 per 10 000 admissions in January – August 2005 to 33 per 10 000 patient admissions in September 2005.

The strain was characterised as PCR ribotype 027 and toxinotype III at the reference laboratory at Leiden University Medical Center. It also contained the binary toxin and had an 18bp deletion in a toxin regulator gene (tcdC). As determined by E-tests, the isolates were resistant to ciprofloxacin (MIC>32 mg/l) and susceptible to clindamycin (MIC=2 mg/l) and metronidazole (MIC=0.19 mg/ml). These characteristics are similar as the strain that has been isolated from oubreaks in the United States, Canada, the UK and the Netherlands.

Contact tracing did not reveal the origin of this strain. The hospital has taken additional infection control measures and used the guidelines recently published by Centre for Infectious Disease Control at the National Institute for Public Health and the Environment (RIVM) in Bilthoven (http://www.rivm.nl). Subsequently, the Health Inspectorate and the Clostridium Reference Centre in Brussels, Belgium, were informed.

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RUBELLA OUTBREAK IN AN UNVACCINATED RELIGIOUS COMMUNITY IN THE NETHERLANDS LEADS TO CASES OF CONGENITAL RUBELLA SYNDROME

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The first children with congenital rubella syndrome (CRS) associated with the recent rubella outbreak in the Netherlands [1] have been born. During the outbreak, which started in September 2004, 387 serologically confirmed cases of rubella were notified. The most recent postnatally acquired case had an onset date around mid-September, suggesting that circulation of the virus has now ended. The geographical location of the outbreak closely matched areas of low vaccine coverage (see http://www.rivm.nl/vtv/object_map/o1503n21466.html). The rubella outbreak predominantly affected an