Cryptosporidium outbreak after a visit to a wildlife centre in northeast Scotland: 62 confirmed cases

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By 25 April, 62 confirmed cases of *Cryptosporidium parvum* infection were reported from an outbreak linked to visits to a wildlife centre in Perthshire, Scotland since 25 March [1,2]. None of the patients are seriously ill, although six children were admitted to hospital and are now recovering.

Lambs, poultry, chicks, rabbits, cattle, ducks and other species were at the wildlife centre. A temporary 'petting area' had been set up, where adults and children could touch young animals. There were no handwashing facilities next to the petting area, although disinfectant hand cream dispensers were available. Animal petting has now ceased at the centre.

About 4000 people may have visited the centre between 25 March and 18 April when the outbreak was detected. At least one case was in a visitor from the south of England. It is possible that other non-Scottish residents have been affected.

An outbreak control team is continuing detailed epidemiological, environmental, veterinary and microbiological investigations in an effort to identify the source of the infection. General practitioners and hospitals in the region have been alerted and encouraged to submit stool samples from possible cases and to report cases to the local public health authorities. In addition there has been widespread coverage in Scottish media (newspapers, radio and television). Members of the public have been encouraged to visit their general practitioner if affected, or to contact the NHS Scotland telephone helpline for more information.

The outbreak control team met for the fourth time on 25 April and reinforced its advice to the public, issued after their first meeting on 19 April, to observe strict hygiene and to use thorough handwashing with soap and water to protect against infection after contact with animals, animal faeces or people with the infection.

Further cases of cryptosporidium infection that may be related to this outbreak should be reported to Christopher McGuigan at NHS Tayside (telephone +44 (0)1382 596987). A detailed questionnaire is available to capture the wildlife centre related exposure history in potential cases.

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Outbreak of tuberculosis in a Catalonian nursery school affects 27 children

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On 15 April 2005, a female assistant at a private school in a wealthy area of Barcelona province was diagnosed with pulmonary tuberculosis at the emergency department of a hospital. She had had a cough for one month before. A chest x-ray revealed cavitary lesions and the sputum smear was positive for *Mycobacterium tuberculosis*.

Tuberculosis contact investigation was initiated 24 hours after diagnosis of the index case. Of the 150 exposed people, 122 were asymptomatic children under 5 years of age (62% were under 2 yrs old and 90% under 3 yrs), 19 were assistants from the nursery school and 9 were close relatives of the index case.

Five days after the index case was diagnosed, an assessment of previous history of tuberculosis and immune suppression was done, as well as a tuberculin skin test (TST) and chest x-ray of all exposed people. The vast majority of children were not vaccinated with the Bacille Calmette Guerin (BCG) vaccine.

Among the 122 children, 36 (30%) had a positive TST (in 92% it was = than 10 mm). Of these 36 children, 12 (10%) had an abnormal chest x ray and were diagnosed as having primary tuberculosis disease. Many children who had a positive TST and an unclear or normal chest x-ray underwent a computerised tomography (CT) scan due to described difficulties associated in diagnosing tuberculosis among young children. The CT scan yielded abnormal findings suggestive of primary tuberculosis disease among 15 more children. Blood samples and an early morning gastric washing were collected from all children with tuberculosis. Testing for acid-fast bacilli in gastric aspirates has yielded negative results in all collected samples.

None of the 19 nursery assistants investigated had abnormal chest x-rays, but the 12 who were TST positive were considered infected and prescribed chemoprophylactic therapy, determined on individual basis. Of the nine close relatives investigated, five had a positive TST, but all had normal chest x-rays.

So far, 27 cases of pulmonary disease among children under 5 years old have been notified to the Public Health Unit of the Health Department of Catalonia. All children with a negative TST are receiving prophylactic therapy and a TST will be repeated in 8 to 10 weeks. Children with TB infection but not disease are also receiving prophylactic therapy for nine months, and those with pulmonary tuberculosis are receiving a standard treatment regimen, according to published guidelines [1].

M. tuberculosis has been cultured in sputum from the index case and drug susceptibility testing has shown the strain to be sensitive to the four first-line antituberculosis drugs.

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Rubella outbreak in an unvaccinated religious community in the Netherlands spreads to Canada

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There are indications that the rubella outbreak that started in September 2004 among members of a religious community in the Netherlands, first reported in *Eurosurveillance* on 3 March 2005 [1], has spread to Canada. This outbreak is specifically affecting some unvaccinated groups within the Gereformeerde Gemeente in Nederland (Netherlands Reformed Community in the Netherlands, a Christian community).

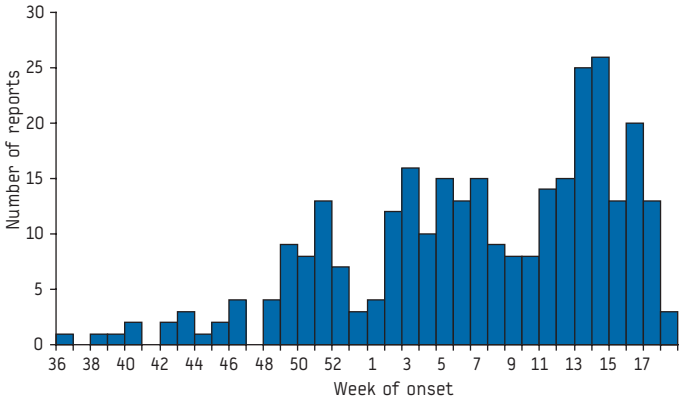
Up to 17 May, 214 laboratory confirmed cases of rubella have

been reported in southwest Ontario. Five of these cases have been in pregnant women. The Canadian Christian community where the cases occurred has historical and social links with the affected groups within the Gereformeerde Gemeente in Nederland, and individuals frequently travel between the two communities. A definitive source for the Canadian patient with the earliest date of onset reported (mid-February 2005) has not yet been identified. An isolate has been obtained from the outbreak in Canada and is currently being genotyped. Attempts are being made to isolate rubella virus in the Netherlands so as to genetically link the respective outbreaks. The World Health Organization has recently published a standardised rubella virus genotyping protocol [2].

In the Netherlands, up to 17 May 2005, 309 laboratory confirmed cases have been reported (from 1 September 2004); 23 of these are known to be in pregnant women (nine in their first trimester). The geographical spread of the outbreak in the Netherlands is documented on the Rijksinstituut voor Volksgezondheid en Milieu website (http://www.rivm.nl/vtv/object_class/atl_infparasit.html). The epidemiological curve (Figure) shows three separate peaks, each larger than the last. It is uncertain whether these peaks reflect the true incidence or are the result of a registration artefact.

FIGURE

Reports of laboratory confirmed cases of rubella by week of onset, the Netherlands (cases reported between 1 September 2004 – 17 May 2005).



Source: Osiris

In both the Netherlands and Canada, the outbreak occurred in a community with low measles, mumps, and rubella (MMR) vaccination coverage and strong social adherence. The proportion of cases in a vaccinated individual is low (0.3% and 0.6%, respectively), indicating that the effectiveness of the rubella component of the MMR vaccine is very high.

Rubella infection acquired during early pregnancy can lead to miscarriage or severe birth defects known as congenital rubella syndrome (CRS). This syndrome occurs in up to 90% of infants born to mothers who are infected in the first trimester [3]. It is important to differentiate primary rubella infection from re-infection because the risk of CRS for re-infection during the first trimester of pregnancy is less than 5 to 10% [2]. Rubella IgG avidity serology has been shown to be a very useful laboratory test for differentiating primary rubella infections from re-infections/past infections in pregnant women where critical patient management/counselling decisions are required [4]. Rubella IgG avidity serology is being used for the investigation of rubella exposure or suspected rubella in pregnant women in the Canadian outbreak.

Rubella and CRS are preventable by immunisation, and both the Netherlands and Canada have a routine two-dose MMR vaccination schedule. During the outbreak, health authorities in Canada and the Netherlands have offered MMR free of charge to unvaccinated individuals (in the Netherlands this has only been offered to those under the age of 18). Public health laws in Ontario allow authorities to exclude unvaccinated children from attending school when there is an outbreak of a vaccine preventable disease. Local public health officials in Ontario have issued indefinite exclusion orders for students who are not immunised or cannot offer proof of immunity. Such a law does not exist in the Netherlands. In addition, the provincial Ministry of Health for Ontario (Ontario Ministry of Health and Long Term Care) has given advice on isolation of cases, quarantining of contacts and travel restrictions. This also differs from the Netherlands, where the emphasis of public health advice is on advising pregnant women to avoid contact with rubella patients.

The effectiveness of both Canadian and Dutch public health advice in preventing spread of rubella and in preventing pregnant women from becoming infected is probably limited. This is firstly because members of the affected communities often decline vaccination, since it contradicts their religious beliefs. Comprehensive information on the uptake of MMR during this outbreak is not yet available in Canada or the Netherlands. Secondly, rubella is most infectious prior to the onset of rash (usual range one week prior to four days post rash onset). Finally, only a minority of cases are diagnosed since rubella virus infection can be asymptomatic in up to 50% of cases and, if symptomatic, usually has a mild course.

Further spread of the outbreak and risk of CRS depends on herd immunity (resulting from vaccination and natural infection) and level of contact with the affected community. In the Netherlands, historical seroprevalence and vaccine uptake data suggest that the level of protection in the general population is high [5]. Even in municipalities where a high proportion of the population declines vaccination, seroprevalence studies suggest that > 97% of women of childbearing age are immune (probably through circulation of rubella virus in the past) [5]. In addition to the groups within the Gereformeerde Gemeente in Nederland, Dutch groups with a relatively low seroprevalence may include some groups of immigrants and those supporting the anti-vaccination movement (including followers of homeopathy and anthroposophical teachings).

In Canada, populations with relatively low seroprevalence may include immigrants as well as other groups who resist immunisation for religious and philosophical reasons.

Although Reformed Christian communities exist outside the Netherlands and Canada, to our knowledge vaccine preventable diseases have only spread internationally from the Netherlands Gereformeerde Gemeente in Nederland to Canada [6,7,8]. Canada's temperate climate, which has synchronic seasons to those of the Netherlands may be one explanation for this. However, onward spread from Canada has been documented in the past: the poliomyelitis outbreak in the Netherlands in 1978 spread to Canada and subsequently into the United States [9].

Public health efforts in the Netherlands and Canada are now focusing on raising awareness amongst the affected community and health professionals, documenting (molecular) epidemiological links, and improving surveillance of CRS.

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Outbreak of community-acquired legionnaires' disease in southeast Norway, May 2005

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Norwegian health authorities are investigating an outbreak of legionnaires' disease in the neighbouring cities of Sarpsborg and Fredrikstad in southeastern Norway, close to the border with Sweden. As of 26 May, 39 cases, including five deaths, have been reported in this outbreak. All cases have been confirmed by urinary antigen testing. Cultures of clinical specimens have not yet been completed.

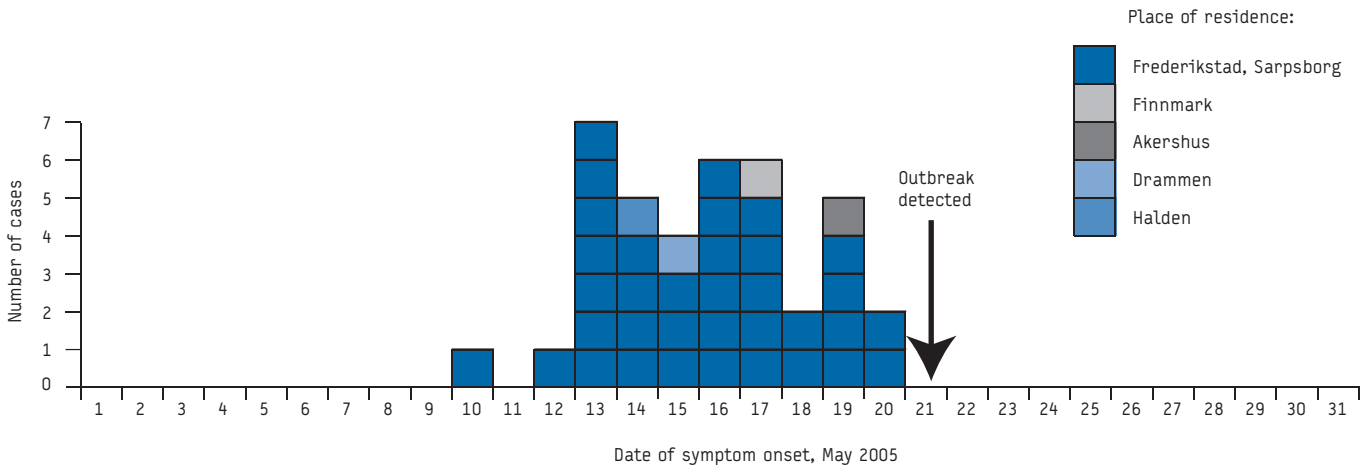
The mean age of patients is 67 years (range: 35-94). Twenty three cases (59%) are in men. All cases are in Norwegian nationals, and there is no information on any international events in the area in the period. Thirty five of the cases (90%) are in local residents, while the remaining 4 cases have been diagnosed in patients elsewhere in Norway who had visited the area during the probable exposure period.

The two cities are situated very close to each other with a total of 120 000 inhabitants. The area is heavily industrial and is not a particular tourist destination.

The source is still unknown. Because the outbreak is large with many cases including deaths, occurring over a wide geographical area within a short time period (Figure), cooling towers are the most likely source. All of the known 19 cooling towers in the area have been closed down, pending results of bacteriological testing and disinfection. Epidemiologists from Nasjonalt folkehelseinstitutt (Norwegian Institute of Public Health) are assisting local health authorities with the outbreak investigation. Other probable sources are also being investigated. Clinical and environmental samples are being genotyped to support other epidemiological data.

Figure

Epidemic curve of the outbreak of legionnaires' disease in Fredrikstad-Sarpsborg, Norway, May 2005



The rate of case reporting has now diminished, and based on epidemiological data, it is probable that the source is now inactive. Local health authorities have not issued any specific restrictions regarding staying in or travel to the area.

The outbreak has stimulated public discussion about statutory regulations for cooling towers and similar installations. Following a similar outbreak in Stavanger in 2001 [1], all owners of cooling towers are now required to notify local health authorities of their installation and to have an adequate system of control and maintenance. Local authorities have a statutory responsibility.

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