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IONAD NAISIUNTA FAIRE GALAIR

Disease Surveillance Report of NDSC, Ireland

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IN THE NEWS

Cryptosporidiosis Outbreak

Two cases of cryptosporidiosis were notified to the Department of Public Health in the Midland Health Board in February 2002. The two cases were linked to the same water source. A case-control study was undertaken. Over thirty individuals were identified who were sick with gastro-enteritis (diarrhoea+/- vomiting) over a 2-3 week period. All had used the same water supply. Stool sampling did not reveal any further cases of cryptosporidiosis. Viral studies were also negative. The case-control study showed an association between illness and the consumption of water.

Pending investigations a 'Boil Water' notice was issued to the users of the water. A risk assessment of the water distribution system was undertaken and laboratory testing of the water to exclude faecal contamination. Testing of water for *Cryptosporidium* was also undertaken.

The water source was a spring. The water was chlorinated and the risk assessment of the water distribution system did not suggest a source of contamination. Laboratory testing of the drinking water was negative for indicator organisms and also for *Cryptosporidium*.

Using an algorithm developed by the UK Public Health Laboratory Service, this outbreak of gastroenteritis could be graded as possibly associated with water.[1] The detection of *Cryptosporidium* oocysts in water is problematic due to the small size of the oocysts (4-6 µm) and their relatively low concentration.[2] The number of oocysts in faecal specimens may fluctuate thus making them difficult to identify in the stool.[3]

Cryptosporidium is a protozoan parasite found in humans, many animals and in birds and fish. The parasite multiplies in the gastrointestinal tract of the host, which then excretes the oocysts of the parasite in its faeces.[4] The oocysts are shed in very large numbers. Infected calves, for example, can shed approximately 10^{10} oocysts daily for up to 14 days. As a result, contamination of the environment can reach a very high level in a short period of time.[2]

Infection does not always give rise to symptoms. In healthy individuals, however, cryptosporidiosis is an important cause of self-limiting but unpleasant diarrhoeal disease. It typically gives rise to profuse watery diarrhoea with, in some cases, cramping abdominal pain, nausea, vomiting and low-grade fever. In patients with suppressed immune systems, the disease can be more serious.[4]

Although cryptosporidial infections are widespread in animals, outbreaks of the infection usually originate from calves or lambs, and these are likely to form the most important reservoir of infection for humans.

It is thought that the number of oocysts needed to cause infection is small, possibly less than 10. Cryptosporidiosis is usually transmitted by the faecal-oral route either from animal to man or person-to-person. The disease is most prevalent in children aged one to five, especially those in schools, nurseries and other childcare facilities. Outbreaks have also been associated with drinking water, recreational use of water including waterslides, swimming pools, lakes[4] and a pet farm.[5]

Soil contaminated with human or animal faeces and the water that drains through it into rivers, streams and shallow underground wells are potential sources of cryptosporidial infection. The oocysts of *Cryptosporidium* are very resistant to adverse factors in the environment and can survive dormant for months in cool, dark conditions in moist soil or in clean water.[2] *Cryptosporidia* are not killed by chlorination.[4] Filtration is an effective method of destroying them.[2] Ultraviolet or other radiation could prove helpful.[2 6]

Linking cryptosporidiosis infection to drinking water can be difficult as the contamination event may be over by the time the illness comes to light.[2]

The incidence of crytosporidiosis in Ireland is not known. Laboratories have different policies on the examination of stool specimens for *Cryptosporidium*. It is not listed as a notifiable disease. However, gastroenteritis in children under two years is notifiable and cryptosporidiosis accounts for approximately 8% of laboratory-confirmed cases notified to NDSC.

Dr. Phil Jennings and Dr. Annette Rhatigan, Department of Public Health, MHB.

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Introduction

This year it is estimated that 900,000 Irish people will holiday abroad and between 150,000 and 200,000 will travel to high risk destinations. Travel brochures are offering adventure holidays in more and more remote areas of the world. Coupled with an increase in immigration this will lead to increased incidence of tropical illness in this country.

There is a myriad of potentially serious infections that have emerged worldwide over the past thirty years. Global warming allows many infectious diseases or disease vectors to prosper in traditionally cooler areas. One outstanding example is malaria, which is emerging in areas previously considered malaria free.

Public health doctors, general practitioners, and hospital consultants must update and widen their knowledge on prevention, surveillance and diagnostic awareness with regard to tropical illness. Medical histories should always consider the question of recent travel.

Recent newspaper reports in the United Kingdom quote the Chief Medical Officer, Sir Liam Donaldson as calling for the establishment of the Health Protection Agency to inform the public about the risks posed by, among other things, rare tropical infections, and to warn doctors about reports of unusual outbreaks. Sir Liam Donaldson said, " One of the greatest challenges for public health services in developed countries is the rapid identification of new or previously known infectious diseases".

Many tropical disease threats are best prevented by pre-exposure vaccination and advice on risk reduction regarding malaria prophylaxis, food, water, insect bites and holiday sex. Recent surveys show that many tourists traveling abroad to high risk areas neglect to seek medical advice prior to departure.

Pre-exposure Vaccination

Yellow fever is the only vaccine required by law for travellers passing through or residing in endemic regions of Africa and South America.

The four basic recommended vaccinations for foreign travel are hepatitis A, typhoid, tetanus/diphtheria, and polio. The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) now restrict the recommendation regarding polio boosters to specific areas in South America and parts of Africa. However, travellers who have never received polio vaccination should have a primary course.

Other vaccines that should be considered, depending on the itinerary and length of stay are:

- Meningitis A and C
- Japanese encephalitis
- Hepatitis B
- Rabies - pre-exposure vaccination eliminates the need for rabies immune globulin and decreases the number of vaccine doses required post-exposure.

Tropical Disease Threats

Malaria

- Malaria is a major health risk for visitors to malarial endemic destinations.
- A recent survey carried out in travellers exiting Zimbabwe from Harare revealed that 23% of travellers failed to take chemical prophylaxis and 18% were noncompliant with medication.[1]
- Muentener et al[2] reported an increasing incidence of imported malaria into Europe with 6840 cases in 1985 and 7244 cases in 1995.
- Malaria is the most common tropical condition which can be life threatening if not recognised and treated immediately. It is estimated that 0.5 to 1% of falciparum malaria cases in the UK die of the disease.[3]
- 95 % of imported malaria deaths in the UK are reported in patients who have returned from sub-Saharan Africa.
- The importance of personal protection against the *Anopheles* mosquito cannot be over-emphasised. This includes, mechanical barriers such as long sleeved clothing and long trousers, mosquito nets, permethrin treatment of nets and clothing and effective insect repellents.
- Correct country-specific advice is required for malaria prophylaxis. The recent introduction of Malarone (atovaquone and proguanil) on a named-patient basis in Ireland has provided us with a safe short-term alternative to mefloquine or doxycycline for chloroquine-resistant areas.
- In exceptional circumstances travellers who are unable to get medical advice within 24 hours of becoming ill or are in places where access to suitable drug treatment is unavailable may be provided with a standby course of antimalarials for self-treatment. Standby therapy includes sulphadoxine/pyrimethamine, artemesinin derivatives, mefloquine or combination of atovaquone and proguanil.
- Children under 5 years of age are at increased risk of malaria as are pregnant women. Chloroquine and proguanil are reported to be safe in pregnancy.
- Returned travellers from endemic areas having a flu-like illness must be screened for malaria and a negative film does not exclude the diagnosis. It is important to alert hospital laboratories of suspected cases. Normally a FBC edta sample will suffice.

Food and waterborne diseases

About 50% of short-term travellers to high risk countries can expect to develop significant diarrhoea. Returning travellers with significant diarrhoea should be screened for parasitic infections such as giardiasis, amoebiasis (*Entamoeba histolytica*) in addition to culture and sensitivity for *Salmonella*, *Campylobacter*, *E. coli* and *Shigella*.

In all cases of travellers diarrhoea, rehydration agents and adequate fluid replacement should be commenced as soon as symptoms become apparent.

Hepatitis A, the commonest viral infection preventable through vaccination, is spread by the faecal/oral route through food and water. It is estimated that the risk in unprotected travellers is one in 500 per week of travel. Hepatitis A vaccine is very effective, initially giving one years protection but if followed by a booster at six months, confers at least ten years and probably life-long immunity.

Schistosomiasis (Bilharzia)

This is particularly common in Lake Malawi, the Nile and other areas of sub-Saharan Africa, the Carribean, South America and the Middle East. It causes chronic gastroentestinal symptoms (*Schistosoma mansoni, S.japonicum*) or genitourinary symptoms (*S. haematobium*).

Prevention is by avoidance of swimming in rivers or lakes and by wearing adequate footwear when walking near water courses. Schistosomiasis cannot be acquired from salt water.

Diagnosis is normally by serology. Positive seroconversion indicates the need for treatment with Praziquantel given as a single dose. Examination of stools and urine for parasites may be a useful screening test for returned travellers.

Dengue

One of the most rapidly developing tropical illnesses is dengue fever, or its more severe form dengue haemorrhagic fever which is estimated to occur in 20 % of cases. It is endemic in Africa, Asia, Northern Australia, Central and South America and the Caribbean.

Dengue is a viral disease transmitted by mosquitoes. It presents as a flu-like illness with fever, headache and myalgia lasting 2 to 5 days. The haemorrhagic form normally occurs in people previously exposed. The clinical features in the first few days of illness are similar to the mild form but then progress to symptoms of shock with bleeding into the skin and mucous membranes.

There is no specific treatment available other than supportive measures. There is no vaccine for dengue fever. Prevention is by personal protection against the house mosquito *Aedes aegypti* which is the chief vector.

Japanese encephalitis

Like dengue, Japanese encephalitis is also caused by an avian group B arborvirus. It is spread from pigs acting as an amplifying host to man by mosquitoes. JE vaccine is available and is recommended for longterm travellers to endemic areas, mainly in South East Asia. The risk to travellers in these areas is thought to be in the region of 1 in 10,000. All travellers, particularly those traveling in rural areas should be advised of the risks of traveling in these areas and on how to prevent mosquito bites.

Leishmaniasis

From the traveller's point of view the cutaneous form is the most likely. This is spread mainly by sandflies found in the Mediterranean basin, the Middle East, Africa and South America. It causes small nodules which may increase in size leading to ulceration.

Sexually transmitted diseases

All travellers, especially young people should be counselled regarding the risk of sexually transmitted diseases (STDs) particularly HIV and hepatitis B and should also be given advice on safer sex.

Hepatitis B vaccination should be given to all healthcare workers, and people who are contemplating sexual activity while abroad. The recommended schedule consists of three doses of vaccine at 0, 1 month and 6 months. An accelerated schedule of three doses given at one monthly intervals and a booster at 12 months, can be given to travellers to high risk destinations. Healthcare workers, including medical students on electives in third world countries should carry standby antiviral treatment for HIV.

Pre and Post-travel Consultation

The pre-travel consultation is an opportunity to review vaccination status in all travellers.

Advice regarding food and water is essential. The old cliché '**cook it, peel it yourself or forget it**' is still good advice but seldom heeded. Emphasis should be placed on food being heated to a high temperature, the avoidance of salads, street vendors, fruit salads, shellfish and ice cream which are all potential sources of travellers diarrhoea.

Water should be filtered, bottled or boiled for a period of five minutes (longer at altitudes over 2000 metres) and kept for no longer than 12 hours in a clean, covered recepticle.

Insect protection with repellents, clothing, nets, and vigilance are all essential for the traveller to protect against yellow fever, malaria, dengue, Japanese encephalitis and leishmaniasis.

Good footwear and avoidance of swimming in still water in rivers and lakes reduces the risk of schistosomiasis.

The importance of STD advice cannot be over emphasised, particularly to young people, single travellers and business people.

Screening of returned travellers where appropriate should include blood tests for liver and kidney function,and urine and stool examination for parasites and organisms.

Conclusion

With increased travel and immigration we must be vigilant and have high levels of suspicion. We need rapid access to laboratory services particularly for malarial screening and consultants with expertise in infectious diseases and tropical medicine.

Dr DE Thomas, Irish Society of Travel Medicine.

The Irish Society of Travel Medicine is open to all doctors and nurses with an interest in travel medicine. They organise two regional meetings and one Dublin meeting annually, in addition to issuing a regular newsletter and updates on all aspects of travel medicine for members. New members are welcome. E-mail address: annehredmond@eircom.net

The World Health Organization has recently released the 2002 edition of International Travel and Health. The aim of the book is to provide information and guidance to the medical profession on health issues associated with travel. Copies are available from: Marketing and Dissemination, World Health Organization, 1211 Geneva 27, Switzerland. An Internet version is available at http://www.who.int/ith

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Preliminary Report of Enteric, Foodborne and Waterborne Outbreaks in Ireland in 2001

Month	Health Board	Pathogen	Mode of Transmission	Location	No ill
Jan	ERHA	SRSV	P to P	Institution/community	349
Jan	ERHA	Suspect viral	P to P	Hotel	27
Jan	MWHB	SRSV	FB	Hotel	140
Jan	SEHB	Suspect viral	Suspect AB	Function hall	61
Jan	SHB	*Cryptosporidium parvum*	Possibly WB	Hotel	4
Jan	SHB	SRSV	AB/P to P	District hospital and res. home	17
Apr	ERHA	Suspect viral	Suspect P to P	Day care centre	7
Apr	SEHB	*S.* Heidelberg	Suspect P to P	Long stay unit, hospital	2
Apr	SHB	SRSV	AB + other	Sports/leisure facility	63
Apr	SEHB	*E.coli* 0157:H7	P to P	Household (extended family)	2
May	SEHB	SRSV	P to P/AB	Hospital/ residential institution	45
Jun	ERHA	Unidentified	Suspect FB	Residential institution	15
Jun	SHB	Unidentified	Suspect WB	Restaurant/cafe	145
June	ERHA	Suspect viral	P to P	Nursing home	15
July	ERHA	Suspect viral	Suspect FB	Restaurant	3
July	SHB	Suspect viral	Suspect FB and P to P	Factory	53
July	SHB	Suspect viral	Suspect FB	Restaurant	3
July	NEHB	*Cryptosporidium spp*	Suspect WB/ cattle	Farm	2
July	NEHB	Suspect viral	Suspect WB	Holiday centre	31
July	ERHA	Suspect viral	P to P	Centre for elderly	11
July	SHB	Suspect viral	FB and P to P	Hotel	20
July	ERHA	Suspect viral	FB and P to P	Staff canteen	5
July	ERHA	NK	Suspect FB	Chinese restaurant	4
Aug	ERHA	NK	NK	Household	2
Aug	ERHA	*Campylobacter*	FB	Hotel (wedding)	14
Aug	ERHA	NK	Suspect FB and P to P	Household	6
Aug	SHB	Suspect viral (SRSV)	Suspect FB and P to P	Hotel	26
Aug	SHB	NK	Suspect FB	Indian restaurant	3
Aug	NEHB	Suspect viral	WB	Community	20+
Aug	ERHA	SRSV	FB and P to P	Residential unit for elderly	32
Aug	NEHB	NK	FB	Family (restaurant)	4
Sept	WHB	Suspect viral (SRSV)	Suspect WB and P to P	Hotel	462
Sept	ERHA	*E. coli* O157: H7	Suspect FB and P to P	Household	4
Sept	ERHA	SRSV	Suspect FB	Hotel (wedding)	40
Sept	ERHA	Suspect viral	Suspect FB and P to P	University	14
Sept	NEHB	*S.*Enteritidis	P to P	Creche	7
Sept	NEHB	NK	Suspect FB	Hotel	24
Sept	ERHA	Suspect viral	Suspect P to P	Hospital for elderly	11
Oct	MHB	Suspect viral	P to P /WB	Hotel	192
Oct	MHB	Suspect viral	P to P	School	59
Oct	MHB	Rotavirus	P to P	Creche	7
Oct	ERHA	SRSV	P to P	Residential unit for elderly	40
Oct	SHB	*E. coli* O157: H7	P to P	Creche	15
Nov	ERHA	Suspect SRSV	FB and P to P	Hotel	56
Nov	NEHB	Suspect viral	P to P	Hospital	6
Nov	SEHB	*E. coli* O157	Suspect animal contact	Household	2
Dec	SEHB	*S.*Typhimurium	Suspect animal contact	Household (extended family)	2
Dec	MHB	Suspect viral	FB and P to P	Nursing home	32
Dec	NEHB	Suspect viral	Suspect FB	Hotel	6
Dec	SEHB	Suspect viral	Suspect FB	Hotel	29
Dec	NEHB	Suspect viral	Suspect FB	Hospital	28
Dec	NEHB	Suspect viral	P to P	Hospital	7
Dec	SEHB	*E. coli* O157 PT114	Suspect WB	Household (extended family)	6
Dec	SEHB	*E. coli* O157 PT8	Suspect FB and P to P	Household	2
Dec	ERHA	*S. aureus*	Suspect FB	Restaurant	5
Dec	SEHB	*E. coli* O157 PT 14	Suspect WB	Household	3

Key: AB = Airborne; FB = Foodborne; P to P = Person-to-Person; WB = Waterborne; NK = Unknown

** The term Norwalk-like virus (NLV) is increasingly being used of Small Round Structured Virus (SRSV). However, as most reports to NDSC used the term SRSV we referred to the viruses as such in this report.*

The table above gives preliminary results of enteric, foodborne and waterborne outbreaks that were investigated and reported in Ireland during 2001. In total, 56 outbreaks were reported during the year resulting in at least 2190 people becoming ill. Fifty-nine percent (33/56) of outbreaks were either confirmed SRSV or suspected viral in aetiology.

The FSAI operated an enteric outbreak surveillance system until June 2001. From July 2001, NDSC took over this function, providing a general surveillance system for all investigated outbreaks of infectious diseases. The data for 2001 was gathered by FSAI and NDSC.

Since July 2001, outbreaks are notified to NDSC using a preliminary notification form. A full report is forwarded once more complete data is available. As there can be a delay in this information becoming available some of the data above are provisional.

In future, it is intended to produce quarterly preliminary outbreak reports for Epi-Insight. It is also intended that Epi-Insight will carry a more complete annual review of outbreaks. The annual review of 2001 will appear shortly.

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Correction: SARI Update

In the March edition of EPI-Insight we reported that the Department of Health and Children had provided funding of €1.5 million for SARI implentation. This was incorrect. The figure to date is €6.9 million.

Salmonella Monthly Report (February 2002):

Strains are allocated to months based on the date of receipt of the isolate from the referring laboratory. These figures are provisional as work may not be finished on particular strains at the time of publication. Data are provided courtesy of Prof Martin Cormican and Dr Geraldine Corbett-Feeney, INSRL.

Health Board	E	M	MW	NE	NW	SE	S	W	Total
S. Typhimurium	2	0	3	2	0	2	0	0	9
S. Enteritidis	2	0	0	0	1	0	0	0	3
S. Dublin	0	0	1	0	0	0	0	0	1
S. Mbandaka	0	0	0	0	0	1	0	0	1
Total	4	0	4	2	1	3	0	0	14